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THE UNIVERSITY FACULTY AND INNOVATION--THEORY, A RESEARCH CASE HISTORY (TELEVISION), IMPLICATIONS. A SOCIAL PSYCHOLOGICAL ANALYSIS IN DEPTH.

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CHARACTERISTICS ASSOCIATED WITH INNOVATIONS IN HIGHER EDUCATION WERE PRESENTED. A CASE STUDY WAS CONDUCTED AT AN ACADEMIC COMMUNITY TO DETERMINE FACULTY RESPONSE TO INSTRUCTIONAL TELEVISION (ITV). AN ASSESSMENT WAS MADE OF (1) THE DEGREE OF SYMPATHY AND ANTIPATHY EXPRESSED TOWARD THE INNOVATION, (2) THE "GENERAL BELIEF SYSTEM" AND "PERSONALITY ORGANIZATION" OF FACULTY MEMBERS, AND (3) ATTITUDES TOWARDS CHANGE. PRELIMINARY DATA WERE ALSO OBTAINED FROM NINE OTHER UNIVERSITIES ON OTHER INNOVATIONS TO DETERMINE THE DEGREE TO WHICH THE RESULTS OBTAINED FROM THE CASE STUDY COULD BE GENERALIZED. TOPICS DISCUSSED IN THE REPORT INCLUDED (1) REVIEW OF INNOVATION THEORIES, (2) THE RESEARCH CASE HISTORY, (3) GENERAL ATTITUDES OF THE FACULTY, (4) SPECIFIC ATTITUDES TOWARD ITV, (5) THE PRO- AND ANTI-ITV PROFESSOR, (6) STUDY OF ATTITUDE CHANGE, AND (7) GENERALIZABILITY OF RESULTS. INDICATIONS WERE MADE OF THE ROLE OF THE STUDY IN STIMULATING FURTHER RESEARCH INTO THE NATURE OF CHANGE PROCESSES IN THE ACADEMIC COMMUNITY. (RS)

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# THE UNIVERSITY FACULTY AND INNOVATION:

## THEORY, A RESEARCH CASE HISTORY (TELEVISION), IMPLICATIONS

## A SOCIAL PSYCHOLOGICAL ANALYSIS IN DEPTH

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# THE UNIVERSITY FACULTY AND INNOVATION: THEORY, A RESEARCH CASE HISTORY (TELEVISION), IMPLICATIONS.

## A Social Psychological Analysis in Depth,

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[1] Mr. Yelkin's death shortly after the experimental phase of the research case history was a serious loss to all involved. He would have been able to add a great deal to the interpretation of many facets of the report. It was agreed by all that he did a superb job in perhaps one of the most difficult aspects of the investigation.

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# Chapter I.

# GENERAL INTRODUCTION

It is one of the firm beliefs of our generation and Western culture that ours is an age of unprecedented change in all areas of life -- social and philosophical as well as technical. While we look back upon previous centuries and other civilizations as backward, pointing to the static aspects of their culture, we point with equal pride and sophistication to the flexibility of our society which permits the acceptance of almost any innovation with great rapidity and a minimum of social disorganization. However, when we subject this belief to a kind of Cartesian doubt and examine it without bias, we find that there emerges quite a different picture. We realize that innovations were and are part of every age and every culture and that -- in every culture and every age, including our own -- man is paradoxically confronted by the forces of innovation urging change, and at the same time feels the impact of counter forces of folkways, mores and other social controls which maintain stability and discourage change.

Consider on the one hand the age of Copernicus in the 16th Century. Surely there have been few innovations which have had an effect as great as that of the heliocentric theory proposed by this great mathematician and physicist. While we may grant that to our age -- with its spaceships circling the earth and speeding toward the moon -- any theory which postulates that our planet is at the center of the universe appears drastically out of date, it must nevertheless be admitted that in the context of 16th Century Europe, heliocentrism was seen as an innovation opposed by a whole array of social forces which attempted to preserve the status quo by supporting geocentrism.

Similarly in our day and culture, though innovations are springing up in unprecedented numbers, we can readily point to evidence that the conflict between the forces for change and those favoring permanence and stability is as real as ever. We need only remind ourselves that the Scopes trial is part of the history of our culture and the present century. As recently as 1965, the textbook committee of a state legislature holding hearings on high school biology texts was confronted by an impressive group of literate citizens who bitterly opposed the teaching of evolution in the public schools. When we consider, furthermore, that in our research case history - which will be presented later - one of the respondents, a college professor, remarked that television is the "invention of the devil," we might indeed predict that Copernicus would have had as hard a time introducing some innovations to our generation as he did in his own time. Thus we find that acceptance of an innovation in our age is far from universal. The speed with which one is accepted appears to depend not only on the innovation itself, but on many other factors, including the nature of the social system and the character of its members.

Past investigations and analyses by behavioral scientists and others interested in the dynamics of change have shown that social institutions rarely if ever encompass even rudimentary mechanisms for change. As a matter of fact, definitions of social institutions usually include such terms as "enduring" and "perpetuating" to characterize their structure. It should not surprise us, therefore, that the greatest resistance to change will be found in those institutions whose traditional, primary function has been the perpetuation of folkways, mores and values of a society such as the religious and educational institutions. Paradoxically, it is commonly assumed that educational institutions, since they are charged with imparting both old and new knowledge to the young, must themselves be highly dynamic, being characterized by frequent changes in teaching methods as well as content. Furthermore, it is assumed that teachers and school administrators are highly specialized experts in evaluating new developments in their field, so that they will carefully choose from among the many innovations those which appear to them to provide the greatest pedagogical potential.

Past studies of innovation in education have found little empirical evidence to support the above assumptions. In general, changes in educational methods have been exceedingly slow, due primarily to the climate of resistance and often outright hostility toward change by the educators themselves. Among the most pessimistic findings concerning such change processes are those reported by Mort (1964), which indicate that some changes, e.g. school children's examination by a physician, require more than a century from the recognition of the need to the final diffusion of the innovation. C. P. Snow is equally pessimistic about innovation in education:

> "In a society like ours, academic patterns change more slowly than any others. In my lifetime, in England, they have crystallized rather than loosened. I used to think that it would be about as hard to change, say, the Oxford and Cambridge scholarship examination as to conduct a major revolution. I now believe that I was over-optimistic." (Snow, 1961)

Other investigators view the situation somewhat more hopefully. Miles (1964), for example, observes that comprehensive changes in the structure and functioning of American educational institutions are occurring now, that innovations of all sorts are being promoted and installed, but not always on their merits. There is considerable indication that the nearly revolutionary changes in our educational system lack planning, integration and most of all, evaluation. Many of the changes are adopted only temporarily to be discarded at any moment, frequently terminating in a return to the old "tried and true" methods. The net change, i.e. the innovations which are actually integrated into the educational process, are still few and the tempo of the change process remains quite low.

Higher education, as distinguished from primary and secondary institutions, can be characterized by even more traditional patterns. Most of these traditions have their roots in the Renaissance, the period during which the European university systems were developed. To a considerable extent, the university community has been successful in resisting change, in spite of the evolvement of a dynamic and far more complex society surrounding it. Such resistance to change has, for the most part, been the responsibility of the faculty members, who frequently emerge as champions for the preservation of the old institutional order. On the other hand, the greatest threat to these traditional patterns comes from present day society at large, whose perception of the university has undergone radical change.

## The nature of innovation in higher education

Beginning with the development of the first universities in Europe five hundred years ago and continuing into the early part of this century, the aura which surrounded institutions of higher learning and its inhabitants, the professors, was one of awe and mysticism. To the populus at large the professor was seen variously as a great learned man, one who spoke in unintelligible tongues, who was to be admired because of his "universal" knowledge, and who was not infrequently thought to be in the employ of evil forces to whom he had sold his soul in return for his all-knowing mind. The student saw his mentor as an idol, to be worshiped in the hope that in response to such admiration some of the professor's vast knowledge might be poured out into his eager young mind. Universal truth, it was generally accepted, was finite, and upon completion of a prescribed course of study, the student was thought to have "absorbed" all of the existing knowledge from his masters, the professors, and was now supposedly ready to go into the world to find practical applications for the acquired learning. In fact, it was more frequently the case that the student never left the university, but became in turn a depository of knowledge to be tapped by a new generation of academic neophytes.

This "universal" knowledge had little relevance to anything approaching pragmatic solutions to problems facing the everyday world. As a matter of fact, the isolation of the university was so complete and the ideas presented within its halls considered to be so irrelevant to the surrounding community, that political dictators - even demagogues - seldom saw the need to interfere with the life of the academic community. This was true even if within the ivory towers ideas were presented which were diametrically opposed to those held by the dictator.

The contemporary university and its professors stand in stark contrast to their predecessors. Higher education has become everybody's business. In our day, the population looks to the university to provide solutions to a myriad of practical problems, ranging from means for increasing agricultural production to more efficient methods of bookkeeping and better child-raising techniques. There can be no doubt that this new role in which our society perceives institutions of higher learning, particularly the large urban or state university, has brought about drastic changes in some of the university's activities. The university and the community have been "forced" to interact. For one thing, the community - state or local or both - now wants not only to examine but frequently to control what is being taught and by what methods, insisting on measuring the effects of higher education in terms of purely pragmatic criteria, usually applying a dollar-per-student yardstick. For another, the university community, or at least some of its members, are becoming increasingly aware that in an age when new facts are added daily with astronomic speed, the university can no longer hope to impart to the student a body of knowledge which will be adequate for the rest of his life.

With all of the publicity focused in recent years on the population explosion in higher education, little needs to be said here about the enormous changes predicted by farsighted educators and laymen as a result of sheer numbers. It is quite clear to those who are informed about the problem that unless the university prepares itself for this onslaught, educational quality will indeed deteriorate, resulting in irreparable loss not only to the academic community but even more important, to society in general.

If we did not know differently on the basis of everyday experience, our knowledge of the dynamically changing role of the university would lead us to predict that there has also been a drastic redefinition of the professor's role within it, which in turn would have brought about changes in his self image, profoundly influencing his value system. We would assume further that the newly emerged university which through its mammoth research programs has produced many of the new discoveries and applications of new principles, is surely one of the pioneers in employing - where possible - these new techniques to its own endeavors. As we will show in the following pages, nothing could be further from the truth. The contradiction which we find here is not unlike that of the overweight physician, admonishing his patient to lose weight or risk a shortened lifespan. Eurich (1964) puts it very bluntly:

> "The paradox is this: On the one hand we are vitally concerned with exploring the unknown, with challenging every old principle and with finding new knowledge in our fields of specialization. On the other hand we accept wholly the traditional methods or old wives' tales about teaching without any thought of improving our procedures." (p.51)

Obviously if we want to resolve this paradox it will not suffice to lament it or to raise a didactic finger. It seems that in order to learn more about it we should at least begin to institute research activity which might lead to a better understanding of this apparent paradox. As social psychologists we are interested in the analysis of beliefs, values and attitudes and in experimentally developing methods and techniques for altering them. Thus we feel that social psychological research is at least one approach to further understanding of the process of adhering to traditional values in the face of innovation. We are well aware of the fact that understandably the college professor feels loath to abandon tried and true methods of teaching in favor of "experimentation" with innovations, which he perceives will at best require of him the troublesome ritual of learning new techniques, and at worst threaten his very status and position. However, it might be in order to probe more deeply into the many facets of this resistance to change process.

The beliefs, attitudes and values of the university faculty have been the subject of a number of investigations and analyses both subjective and objective. For example, Williams (1958) presented a subjective appraisal of the college faculty of one institution; Lazarsfeld and Thielens (1958) examined the effects of "McCarthyism" on academic freedom among a cross section of social science faculty members selected from a sample of American colleges;

The New Professors (Bowen, 1960) examined university faculties by virtue of a series of essays by a group of individual professors; an investigation by Russell (1962) which focused on faculty satisfactions and dissatisfactions at a specific university illustrates still another type of study, local ones dealing with faculty morale; The American College (Sanford, 1962) investigated in detail the unique kind of social institution which the American college represents and its relationship to the larger society; The Academic Marketplace (Caplow and McGee, 1958) examined the professor in the framework of the sociological and economic pattern in which he must function. However, none of these studies pursues the problem of faculty resistance to innovation through an objective, intensive investigation, designed to produce empirical data based on a university faculty as a whole. Consequently, we designed a "research case history" in order to begin to fill this apparent void. However, even though objective approaches to questions of this nature have the greater scientific validity, subjective analyses can be provocative. So in our study both are involved.

## A research case history: an empirical examination of faculty attitudes toward change

We are most of all concerned about innovation in higher education in general. Why is change in this area so slow in coming? Who promotes change in higher education and where are the sources of resistance? Are there innovations which are more rapidly institutionalized than others, or can we be reasonably safe in making generalizations about all changes? These are the basic questions which are of interest to us. However, they are obviously far too global to be answered empirically and objectively without first exploring more specific sub-questions which will provide us with some data hopefully helpful in finding answers to the larger questions. At the same time a more definitive exploration provides us with an opportunity to design and test instruments which will be useful for further research of a more global nature.

Viewed within this context, our empirical study, which is the subject of the chapters which follow, should in fact be regarded as a "research case history" of innovation in higher education. It examines one academic community's response to a particular innovation, namely Instructional Television (ITV). However, along with an assessment of the degree of sympathy and antipathy expressed toward this innovation in instructional media, the investigators also obtained data concerning the general belief system and personality organization of faculty members. Combining these more general data with specific attitudes toward ITV, the study introduces the reader to some prototypes of pro- and anti-ITV professors, prototypes which, although theoretical in nature, provide hopefully valuable hypotheses concerning the characteristics of the innovator and non-innovator.

Finally in our research case history we addressed ourselves to the question of attitude change. There are within social psychology a number of theoretical formulations dealing with attitude modification. Some of these were tested in our research case history by means of a "natural setting" experiment which, while free of the restrictions of a laboratory environment, did permit control of a number of variables.

Having thus moved from the very broad issue, innovation in higher education, to one which could be subjected to a more manageable analysis as a case history of innovation, namely faculty receptivity of ITV at one university, the authors felt that it would be interesting to return to the more general questions raised above. To gain some indication of the generalizability of the results obtained in our research case history to other universities and other innovations, we visited nine other universities to obtain some preliminary data. These colleges and universities varied in size, the source of their financial support, and were located in the West, the Southwest, the Northeast and East.[1] A sample of administrators and faculty members at each of these nine institutions was interviewed. We utilized a group of open-end questions to solicit the interviewees' reactions to some of the principal findings of our research case history, and to gain some insight concerning their conception of innovations in general on their campus. Their replies and reactions were drawn into a composite analysis which appears in Chapter VIII of the present report. Although this analysis is not derived from the systematically generated data of the kind obtained in our research case history, we feel that it has considerable value in providing the basis for provocative hypotheses which should be tested in further studies within the broader framework of the social psychology of innovation in the university, particularly with respect to the role of the faculty in the change process.

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[1] A more detailed account of the methodology employed in this portion of our study is presented in Chapter VIII.

# Chapter II.

# THEORETICAL CONSIDERATIONS -- A REVIEW OF INNOVATION THEORIES

Any study which hopes to make a significant in-depth contribution to the aggregate knowledge in a given area of social psychology in a natural setting or field situation has a high price tag. This is true both in terms of its financial requirements and the demands for large amounts of time and energy on the part of the investigators, the subjects, and the numerous other individuals who are called upon to contribute their skills in such a major investigation. Hence it behooves the investigators who undertake to study behavioral phenomena to employ methodologies and experimental designs which will provide data capable of the broadest possible interpretations and theoretical considerations without, of course, jeopardizing the applicability of the findings to the specific questions generic to the study.

Our investigation of the faculty attitudes toward Instructional Television (ITV), carried out at Metro University,[1] is no exception to the above generalization. The primary phase of the project required a period covering over two years and involved, in addition to the principal investigator, a sizeable research team, 319 subjects - of which 108 contributed a considerable portion of their time for purposes of follow-up depth interviews - and, finally, 20 subjects who devoted approximately 25% of their time during one entire academic semester, for which they were employed as consultants.

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[1] In order to protect the anonymity of the university involved in the present investigation, the fictitious name "Metro University" is used in referring to the institution.

Because of the setting of the investigation and our belief that it may have significance within the broad framework of higher education, we propose in the present report to go beyond specific interpretations of our empirical findings, each of which can to some extent be considered as independent from the other. Some of these interpretations may provide valuable postulates related both to basic social psychological problems and to some rather practical problems related to the process of innovation in the university. Others may point to the need for further investigations and/or contribute to the testing of existing theoretical frameworks.

In a sense, then, the reader will find that our presentation permits alternate levels of analysis, one or more of which might prove to be of particular interest to him. We thought it might be helpful therefore to list some of the areas and approaches with which we will deal in the present report.

1. Instructional Television: Certainly the exploration of existing attitudes toward, and future possibilities for, the use of television as an instructional device at the university level was a central focus. On this topic alone the data from our research case history hopefully provide some social psychological perspective for those concerned with improving ITV as a useful tool of the college educator.
2. Higher Education and the University: On a broader level, our research case history contains certain information about the urban university as an institution *per se*, and particularly the personality structure and attitudinal configurations of a faculty.

3. Attitude Theory: Our data can be examined in the light of some of the prevelant social psychological theories concerning the formation and change of attitudes. An extended discussion of some of these theories and their relevance to our findings can be found in Chapter V.
4. Methodology: We feel that our investigations may have value as an unusual model of social psychological research, particularly that aspect of it which is implemented in a natural behavioral or field setting. Because of the many difficulties involved in studying behavior in "the everyday world", much testing of social psychological theory has been conducted in more or less contrived laboratory settings. This often raises questions concerning the generalization of research findings, since such experimental situations often are too removed from natural behavioral or field situations. The senior author (Evans, 1966b), as well as other social psychologists such as Sanford (1965) and Sherif (1961), has recently attempted to make a case for the importance of natural field setting research dealing with significant human problems. In this respect, our investigation represents an unusual departure from many previous investigations concerned with testing hypotheses implicit in social psychological theory.
5. Innovation Theory: A far broader framework than the above mentioned attitude theory is provided by an emerging theoretical framework based on the analysis of behavioral patterns

in response to innovation in a number of social settings. Although there is a rapid accumulation of studies with this general theoretical orientation, it may as a matter of fact be premature to utilize the word "theory" in this context in the manner in which we speak of "theories" of attitude and attitude change, because of the much greater level of abstraction involved in concepts of innovation in this general sense. Nevertheless, it is our feeling that the present study may well permit certain projections which could fit this admittedly abstract and often not clearly delimited framework of innovation theory at a social psychological level of analysis. As a matter of fact, this possible dimension of our study is important enough, we feel, to justify a brief review of some of the more provocative presentations in the literature in this field, particularly as it may tie into the projections of our investigation. It is important to realize, however, that we are neither presenting necessarily new theoretical material, nor attempting to interpret our results as a means of testing any particular hypothesis proposed by earlier innovation theorists. We are in effect merely summarizing or referring to some of the more interesting work in this field, only occasionally suggesting ways in which our findings might be interpreted in the light of such work. Hopefully this may represent a first approximation in isolating some of the significant variables which should be involved in systematically exploring innovation in higher education *per se*.

In this respect we will draw particularly heavily from the fairly recent publications of Miles (1964) and Rogers (1962), which integrate contemporary research efforts in educational innovation and innovation in general in a relatively broad manner, lacking of course any significant number of research-based studies of innovation in higher education *per se* on which we could draw for our present report. Consequently the theoretical portions of our report may often be characterized by a dependence on speculative rather than research-based findings.

## Innovation: change versus status quo

What are the factors contributing to the prompt diffusion and rapid adoption of one particular innovation, while another - introduced at the same time into the same social system - is rejected or requires far greater time for its adoption? This is the question which underlies many of the numerous studies on diffusion of innovation. Most of these investigations have been approached in the context of those behavioral sciences which concern themselves primarily with collective rather than individual behavior and which place proportionately greater emphasis on the nature of the social system than on the individual. Thus Rogers (1962) lists the following six major diffusion traditions: 1) anthropology, 2) early sociology, 3) rural sociology, 4) education, 5) industrial sociology, and 6) medical sociology. Yet he goes on to point out that every area of the behavioral sciences has some interest in diffusion of ideas. We might expect then that social psychology, with its emphasis on the study of individual behavior vis-a-vis the social environment, would be a fertile field for the study of the diffusion of innovation.

Many models of innovation research emerge from the above named traditions, some rather vague and ill-defined, a few carefully worked out and precisely defined. Among this latter group are the formulations by Katz and Levin (Katz & Levin, 1959; Katz, 1961). These investigators pinpoint four crucial elements in the analysis of the diffusion of an innovation: 1) the tracing of an innovation, 2) over time, 3) through specific channels of communication, and 4) within a social structure. To this we might add a fifth element, namely the individuals or group within the social system which are in a personal way confronted with, sometimes even threatened by, the innovation.

With this addition, our investigation meets the criteria outlined by Katz (1961). In our research case history concerning innovation in universities, we are essentially investigating the diffusion of instructional television (ITV), by individuals or groups (faculty members and the various departments), over time, linked to specific channels of communication (e.g. the original letter from the investigators through the Dean of Faculties to the total Metro U. faculty), within a social structure, namely the university community.

It appears then that there are four major components which influence the process whereby an individual or a group becomes aware of, evaluates and finally accepts or rejects an innovation. We shall examine each of these in some detail. To begin with, there is the innovation itself; by this is meant a new idea or a new cultural object, though even in the latter case it is the idea about the object which is diffused. Second, there is the process itself, beginning with the introduction either from within or from without the social system, its promotion and final adoption. Third, there are the characteristics of the individuals or groups who make up the membership of the social system, and fourth, there is the nature of the social system itself, the context into which the innovation must be incorporated. The system can be a society or merely a subgroup, such as the university faculty in our study.

## The innovation

As used in the literature, this component seems to have two sub-components. First is the idea or item, novel to a particular individual or group, and second is the change which results from the adoption of the object or idea. We would also include among innovations items or ideas which represent a re-combination of previously accepted ideas. For example, in our research case history: while television can be considered an innovation which has been broadly accepted, the use of this medium as a teaching device has encountered strong resistance.

Apparently, any notion that the speed with which an innovation is adopted is necessarily related to its usefulness to society as a whole needs to be discarded from the start. For example, the glue-sniffing fad among teenagers was rapidly diffused throughout the country, but can hardly be considered beneficial to our society. In a more basic vein, the reluctance of many Americans to accept fluoridation of water supplies for the prevention of tooth decay as described elsewhere (Evans, 1965; Gamson & Lindberg, 1960), can hardly serve as an objective criterion for evaluating the effectiveness of fluorides. As a matter of fact, Miles (1964) goes so far as to say that "educational innovations are almost never installed on their merits." Hence the value of an innovation to the society does not provide us with a criterion for predicting the speed with which it will be accepted or rejected.

The findings of our investigation support the view expressed by Rogers (1962) that the actual characteristics of an innovation are of little importance to its adoption. What does seem to matter is the way in which the individual perceives the relative values of the innovation. For example, the data from our research case history, to be discussed more fully later, indicate that the "innovators" (Pro-ITV) did in fact perceive ITV differently from the "laggards" (Anti-ITV). Attempts to delineate the different characteristics of an innovation might very well, therefore, proceed from the perceptions of the individual or the group, i.e. subjective or phenomenological rather than objective evaluations. Rogers (1962) lists five characteristics which when looked at from the standpoint of individual or group perceptions, have in past research been found to affect rate of adoption: 1) relative advantage, 2) compatibility, 3) complexity, 4) divisibility, and 5) communicability.

The individual confronted with an innovation will determine its relative advantage largely on the basis of whether he thinks it is superior to the ideas which it supersedes. Thus our professors would have to perceive ITV to be essentially superior to traditional teaching methods in order for this to affect the rate of its adoption. Although economic advantage is one of the dimensions subsumed under this category, other advantages, e.g. reduced teaching load, more time for research, may also be included here.

Compatibility of an innovation relates to the degree to which it is perceived to be consistent with existing values and past experiences of the adopters. This is one of the characteristics which, in the case of ITV, appeared to contribute heavily to the retardation of the rate of adoption. Most of our respondents saw ITV as wholly inconsistent with the university climate as they perceived it. To them it lacked the important ingredients of personal contact between teacher and student, feedback from the students, and proper supervision of the student, which they considered essential to the learning process.[2]

The recognition that ITV would require special training, would expose weaknesses in teaching methods, and would lend itself to the teaching of only certain subjects, is an indication of the degree of complexity with which ITV was perceived by our respondents.

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[2] Refer to Appendix 9 for a comparative analysis of the reasons given by faculty members for accepting and rejecting ITV at four universities.

Not all innovations, of course, require an all-or-none acceptance. Most, if not all, can be perceived as divisible into stages which may make adoption less painful. The most frequent divisibility employed by potential adopters is that of limited adoption, which does not require wholehearted acceptance of the innovation over the older idea, but leaves the way open to return to the older idea at any time. This appears to be the case with ITV, as we will indicate later in this report. Such a phenomenon emerges with such regularity from the histories of ITV diffusion on the American campus that we feel we can identify it by what we have labeled the "reversion effect". What we find in fact is a kind of pseudo-acceptance of an innovation, i.e. acceptance of ITV on a limited basis, frequently referred to as "adopted experimentally", which makes later abandonment (and reversion to older processes) so easy that it is almost inevitable. This "experimental" phase can last for extended periods of time, often years, postponing rejection or complete adoption almost indefinitely. The immediate cause of the reversion may under these circumstances be quite insignificant in long-range terms, e.g. the temporary breakdown of equipment, the lack of properly trained personnel, or the curtailing of budgetary allocations. Under the rubric of maintaining ties with earlier practices (which also contributes to setting the stage for reversion), we might mention that our respondents generally found the combination of ITV with more traditional education methods, e.g. discussion sessions, laboratory periods, more acceptable than straight television courses, even when it was difficult to show how the utilization of more traditional methods in conjunction with TV necessarily contributed significantly to student learning.

Finally, rate of adoption is a function of the degree to which the results of an innovation can be communicated to others. This is of course a two-way street; both negative and positive results can be communicated. Again we are dealing here with perceived results rather than actual results. Hence in our study the idea that students enrolled in television courses make lower grades was effectively communicated, although it appears to be contrary to fact.

One further broad distinction must be made between types of innovations. There are some innovations which by their very nature require acceptance or rejection by the total social system with relatively little freedom for the individual member, while others permit the individual to accept or reject it independent of the action of other members within the group. We will return to this aspect of the problem in our discussion of the system itself; however, the distinction between these two categories of innovations is in itself important. For example, it is possible for a member of a community to decide independently whether or not to acquire a television set, but he would find it more difficult to reject fluoridation which has been adopted by a community whose water supply he shares.

Innovations vary greatly in the amount of change which their adoption brings to a given social system, and this may directly influence the speed of diffusion and adoption. Miles (1964) alludes to this dimension when he states that: "....other things being equal, innovations which are perceived as threats to existing practice rather than mere additions to it are less likely of acceptance; more generally innovations which can be added to an existing program without seriously disturbing other parts of it are likely to be adopted." (p. 638)

## Innovators and laggards: a description of prototypes

The investigation which comprised our research case history of innovation in higher education attempts among other things to ferret out the underlying personality characteristics of individuals within a system who display certain identifiable attitudes toward an innovation, specifically Instructional Television. One of the methodological devices adopted for this purpose is the psychological analysis of extreme or antipodal groups, to be discussed in Chapter VI. This is a method of analysis common to many studies in the behavioral sciences but one which is frequently accompanied by the danger of over- or even mis-interpretation. Reactions of professors who read a preliminary report (Evans, Smith & Colville, 1963) of our research case history indicated that the report of such findings may even arouse hostility. So we will repeatedly make the reader aware of the fact that the presentation of characteristics of such atypical groups has its value primarily in that it permits the researcher to make general comparisons which may yield fruitful hypotheses for future research. Investigators using this device do not necessarily imply the actual existence of individuals or groups who possess all or even most of these characteristics. Such prototypes are, in fact, pure abstractions of the sample of behavior under analysis. For example, it is statistically possible that any one individual may be in favor of or opposed to ITV and may not possess any of the characteristics found among the extreme Pro- or Anti-ITV groups.

Rogers (1962) characterizes five adopter categories which he calls "ideal" types, and which are again abstractions applying to prototypes of the kind described above, although in the case of his analysis they were not deduced from an actual research effort of the type involved in our ITV research case history. However, each of his categories is also characterized by particular attributes.

For purposes of our investigation, we are concerned primarily with the two prototypes emerging from our research case history which will be discussed later in detail. In order to place our later discussion into the interesting context of another theoretical system, we shall list here all of the categories along with the salient values attributed to each by Rogers (1962). 1) Innovators - "Venturesome" - willing to accept risks; 2) Early Adopters - "Respect" - regarded by many others in the social system as a role model; 3) Early Majority - "Deliberate" - willing to consider innovations only after peers have adopted; 4) Late Majority - "Skeptical" - overwhelming pressure from peers needed before adoption occurs; 5) Laggards - "Tradition" - oriented to the past.

Rogers, on the basis of a number of empirical studies, concludes that plotting these adopter categories over time yields close to normal distributions with a mean and standard deviations which may be used to delimit the above adopter categories. Thus Early Majority adopters fall within the 34% representing one standard deviation below the mean, while Late Majority adopters are shown to be one standard deviation above the mean. Laggards make up the 16% of the upper tail of the curve, while the lower tail shows Early Adopters comprising the $13\frac{1}{2}$% above the first standard deviation, and finally, the $2\frac{1}{2}$% above the second standard deviation is labeled as Innovators.(See Figure 1.)

Innovators: The task of introducing an innovation into a social system and guiding it along a frequently circuitous route to adoption is undertaken by the innovator, or innovating group. As pointed out previously, the idea can come from a source external to, or part of, the innovation-receiving system. It can be introduced by a "change agent", a term used by Rogers and others to identify "a professional person who attempts to influence adoption decisions in a direction that he feels is desirable." This permits the distinction between one who simply introduces change and the innovator who is really the first person within the system to adopt the innovation. The change agent has emerged as an important figure in many areas of innovation research, he is the county agent in agriculture, and the drug detail man in medicine. In the field of education, however, such change agents are virtually nonexistent, and as we will see in a later chapter,

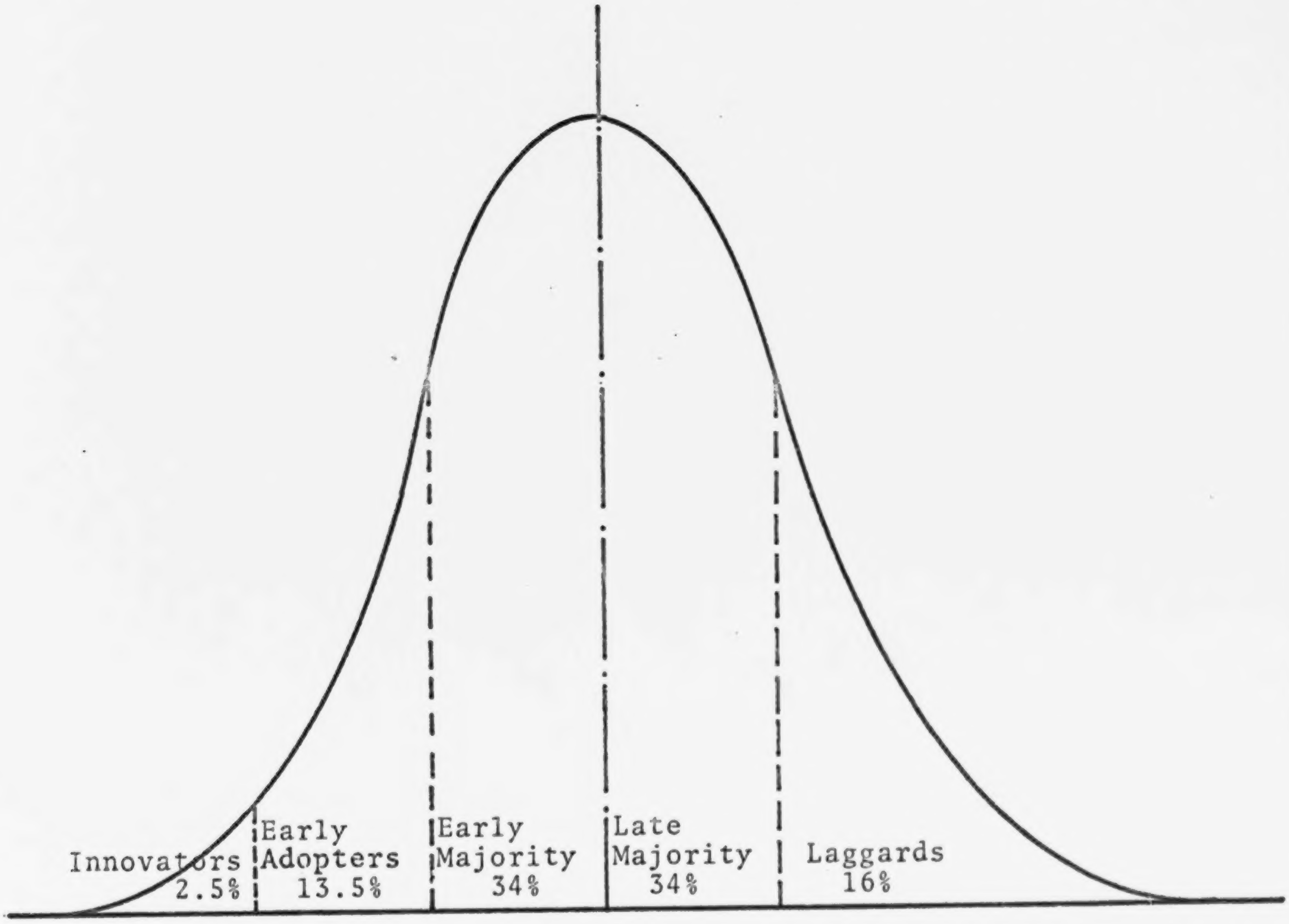

Figure 1. Adopter categorization on the basis of relative time of adoption of innovations (after Rogers, 1962).

this may be one reason why so many members of an educational system are frequently uninformed about changes in content and technique in their particular area of teaching. The book salesman, for example, cannot be classified as a change agent, since his main purpose is not to change, but simply to promote a particular brand of a long-standing method, i.e. the use of textbooks. Thus the responsibility for introducing an innovation into the system in higher education, usually falls to the person who is also the first adopter, and we will therefore use the term "innovator" to mean a person (or a group) who introduces the new idea, as well as the one who is first to adopt it.

Who are the innovators? What sort of personality characteristics might they have in common with other innovators? What are their values, their reference groups, and their attitudes? What is the hierarchy of their loyalties? A composite picture of the innovator, admittedly set forth as an "ideal type", is presented by Rogers:

> "Observers have noted that venturesomeness is almost an obsession with innovators. They are eager to try new ideas. This interest leads them out of a local circle of peers and into more cosmopolite social relationships. Communication patterns and friendships among a clique of innovators are common even though the geographical distance between the innovators may be great. They travel in a circle of venturesomeness, like circuit riders who spread new ideas as their gospel. Being an innovator has several prerequisites. They include control of substantial financial resources to absorb the loss of an unprofitable innovation and the ability to understand and apply complex technical knowledge. The major value of the innovator is venturesomeness. He must desire the hazardous, the rash, the daring and the risking." (1962, p. 169)

Like the rugged pioneer of 19th Century America, who was in fact an innovator, not all of the character traits of the innovator appear to be socially desirable. As a matter of fact, almost by definition, other members of the social system perceive him as deviant to some degree. Rogers points out that the degree to which innovators are perceived as deviants depends in part on the social system's norms related to innovativeness. Hence in a social system which is generally more tradition-oriented, as seems to be the case for most university communities, the innovator is perceived as highly deviant. He will likely consider himself to be a deviant, though if he does, he will identify with reference groups outside the system who validate his behavior and thus, to use Rogers' words, "find himself in step with a different drummer."

That the motives for advocating or supporting change are not always identical or necessarily clearly discernable is suggested by Barnett's interesting typology of innovators:

"1. The Dissident:

who have 'consistently refused to identify themselves with some of the conventions of their group.'

2. The Indifferent:

who are prepared to accept new ideas because they have not dedicated themselves irretrievably to a custom or an ideal of their society.

3. The Disaffected:

who are at odds with their society as a result of such possible variables as marginal status, disillusionment, frustration, circumvention by specified enemies, generalized social anxiety, guilt depression.

4. The Resentful:

who are susceptible to a suggestion of change because they have less to lose by accepting it, often nothing to lose." (Barnett, 1952, p. 381)

The diversity of motives, often occurring even within one individual, may explain some of the puzzling findings of our study with regard to the Pro-ITV professor. An innovation may appeal to a particular individual purely because he has become disenchanted with the old order. Watson (1964) in his study of an innovation in education describes such a group of what we might term "pseudo-innovators." They were dissatisfied with traditional ideas, but their emotional or personality problems sooner or later led to dissatisfaction with the innovation equal to that earlier with the traditional idea. In their first enthusiasm members of this group are often unrealistic about their expectations, and before long become disillusioned and resentful. They then repeat their pattern of rebellion. We can see that in fact these are not real innovators, for if diffusion depended on them the innovation would not flourish. To be successful the innovator must maintain a delicate balance between deviance and conformity. The requirements for a successful innovator are pinpointed by Clee and Reswick (1964): "In designing and implementing educational innovations hard work, patience and courage are required to overcome fantasies and stereotypes so that trust can be built and help given and accepted as common objectives are faced."

Tarde (1903), one of the early advocates of modern sociological analysis, set forth the requirements for innovators in this manner: "To innovate, to discover, to awake for an instant the individual must escape for the time being from his social surroundings. Such unusual audacity makes him super social rather than social." Perhaps one of the most vivid anecdotal descriptions of an innovator is that of Thomas Alexander by Watson:

> "He was a creative maverick who wore no educational or political brand. He was an individualist with little confidence in collective decisions. He was basically kind and fair minded, but he rather enjoyed shocking people with unexpected and extreme pronouncements. His bark was worse than his bite."
> (1964, p. 100)

One interesting paradox emerges when we rate the innovator on a practical-theoretical scale. It would be assumed intuitively that researchers, inventors, and teachers are surely innovators. This appears not to be the case. Rogers (1962) states that: Typically, the innovators were practitioners who were involved in research and academic teaching as a sideline." Our own findings would support this view. The innovators (Pro-ITV professors) came generally from the more pragmatic areas of the university, removed from the more academic core. Furthermore, their focus tended to be away from the academic endeavors of the university, particularly classroom teaching. The innovator also appears to be favored with relative financial security. Thus Ross (1958), reviewing a number of studies dealing with educational innovation in public schools, concluded that the one variable most closely related to innovativeness is the relative financial security of the innovator. The question of cause-

and-effect raised by Rogers, i.e. are the innovators economically secure because they innovate or do they innovate because they are economically secure, is of course quite legitimate. In our study we detected some tendencies of positive attitudes toward ITV being related to a better financial position of the respondent, though such evidence was indirect.

Laggards: On the other end of the spectrum of adopter categories is the laggard. He is the last in a social system to adopt the innovation, if it is adopted at all. Rogers points out that this anti-innovation individual must be considered to be as deviant as the innovator. While the latter underconforms to the standards of his society, the former overconforms to traditional values and ideas. It is not surprising that many studies, including our research case history, found the laggards' salient values to be tradition-oriented, with frequent references to the past. In most systems the laggard shares with his opposite, the innovator, a low social status. The high social status and respect tends to be bestowed upon the more moderate adopter falling near the center of the adopter-laggard scale, at a point slightly favoring innovations. Past research also indicates that the laggard has little specialization in his field, generally a small operation (function) in the social system, and is frequently older than his innovator colleague. All of these characteristics would indicate that the laggard's position in the social system is rather insecure. As a matter of fact, Rogers confirms this hunch on the basis of his analysis of several studies, by stating that "laggards are most likely to drop out of the social system."

As we pointed out in the preceding section, to be an innovator requires that one have a cosmopolite[3] orientation, i.e. one which is external to a particular system. The laggard avoids such orientation, his horizon is limited, his information sources are found within a narrowly defined environment. Neighbors, friends, relatives with values similar to his own are his main information sources. Actually the extreme laggard could be described as an isolate or at least a semi-isolate.

Again our study supports some of these hypotheses taken for the most part from the review presented by Rogers. Our data related to this dimension, which will be presented in Chapter III, indicate the tendency of extremely Anti-ITV professors to identify with traditional values in the system. Their preoccupation with traditional methods of classroom teaching, student evaluation, and generally less cosmopolite orientation, endows them with some of the characteristics which predict non-innovative behavior.

Summarizing the attributes of the laggard, we again quote Rogers in describing this "ideal type":

> "Laggards are the last to adopt an innovation. They possess almost no opinion leadership. Laggards are the most localite of all adopter categories, and many are near-isolates. The point of reference for the laggard is the past. Decisions are usually made in terms of what has been done in previous generations. The individual interacts primarily with others who have traditional values. When laggards finally adopt an innovation, it may already be superseded by another more recent idea which the innovators are using. Laggards tend to

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[3] A more detailed discussion of the so-called cosmopolite-localite dimension will be presented in Chapter VI.

> be frankly suspicious of innovations, innovators and change agents. Their advanced age and tradition direction slows the adoption process to a crawl. Adoption lags far behind awareness of the idea. Alienation from a too-fast-moving world is apparent in much of the laggard's outlook. While most individuals in a social system are looking for the road to change ahead, the laggard has his attention fixed on the rear-view mirror." (1962, p. 171)

Are innovators or laggards consistent in their behavior? As is the case with most human behavior, the evidence would tend to indicate considerable inconsistencies. While Rogers reports some evidence that innovators are consistent in adopting innovations in the same category, e.g. methods of livestock feeding or crop rotation plans, there appears to be less certainty that a farm innovator is also an innovator in political ideology, consumer behavior or other areas of life. As will be indicated later, our data seriously challenge any consistency hypothesis. The results of our factor analysis in Chapter V indicate that attitudes which suggest non-innovative or lagging behavior toward ITV may stand in relative isolation from attitudes toward other objects in the individual's environment. Furthermore, our analysis of the prototypes of the Pro- and Anti-ITV professor also points to such inconsistencies. Whatever the reasons may be for such inconsistencies, and some of these are discussed in later chapters, the extremely Anti-ITV professor favored such perceived innovations in his setting as state support for the university and admission of qualified Negroes, while the extremely Pro-ITV professors were less favorably disposed toward these innovations. But how predictable these behavioral inconsistencies concerning different innovations are is, of course, a matter of conjecture. As we indicated earlier, Rogers speculates that there are relatively few inconsistencies, that an individual who is an innovator with respect to one innovation is not likely to be a laggard with respect to another, even if the two are from diverse categories. On the other hand, our data relating to ITV point to the possibility of significant inconsistencies among some individuals.

### The innovation receiving system

Adopters, whether innovators, laggards, or in between these extremes, live in social systems within which the diffusion of an innovation must take place. This innovation-receiving system (Miles calls it the "target system") is simply an aggregate of individuals who are engaged in endeavors having similar or identical goals. Such a system may be clearly delimited, like a school district, a university faculty, or it may be less clearly defined geographically, such as farmers in a particular county or state.

Many students of social systems, as they study the diffusion of innovation, have placed major emphasis on the social system itself. Social psychologists (looking at such problems from the individual rather than institutional level of analysis) tend to place greater emphasis on the individual's role within the social system, the way he affects and is affected by it, though this is not to say that psychologists do not consider the nature of the social system to be of tremendous importance to any change process. To begin with, it is important to remember that the system was pre-existent to, and will continue to exist after, the innovation has been diffused. Generally the basic values and characteristics of the social system also existed prior to the time a particular individual became a member of it. This would be an argument in favor of an analysis of the system apart from the individual member. Yet we know, of course, that the social system, at least to some extent, governs and is governed by the behavior of the individual; thus we would find it difficult to discuss the system without reference to the characteristics of its members.

Some preliminary inferences from the consistency of certain responses of faculty members of all ten of the universities with which we deal in the present report, lead the authors to suspect that the manner in which a system influences the judgment of an innovation by one of its members could be subjected to analysis within the theoretical framework of Adaptation Level Theory. Advanced originally by Helson (1947), this theoretical approach provides mathematical formulations which permit quantitative predictions concerning an individual's changing judgment of physical stimuli, e.g. size, weight, loudness, etc., based not only on the characteristics of the stimulus to be judged, but also on previous experience with similar stimuli and the background or context within which the particular stimulus is to be judged. Helson found evidence that these factors combine to form a neutral point or adaptation level against which new stimuli would be judged, but that further judgments would cause the adaptation level to shift in a predictable direction and amount.

Several investigators have found that the usefulness of this model is not limited to the study of sensory perception, but may in fact be utilized for the study of a wide variety of psychological phenomena, including social judgments. Thus there is experimental evidence that ratings of skin color or the physical heights of others can be quite independent of the subjects rated, and depend to a significant extent on the rater's past experience (Marks, 1943; Philip, 1951). In another study along the same line, Hinckley and Rethlingshafer (1951) found that the judgments of the melodiousness of Shakespearean poetry was influenced by the background against which it was presented. Raters' judgments were enhanced by knowledge of the poet's name, while knowledge of the period of literature without specific identification of the poet lowered the perceived melody. Asch (1958) and Sherif (1935), among others, have also suggested that in understanding and predicting social behavior, descriptions of even complex social stimuli in themselves are less important than the knowledge of how they are perceived by the individual within his perceived context.

Applying the concept of adaptation level to the study of innovation, particularly to innovation in higher education, we would postulate that the individual's judgment of the value of a particular innovation would be influenced, to a considerable extent, by the general climate of the university, i.e. whether it encourages or discourages change; and by the individual's own past experience with similar innovations. Furthermore, the theory could postulate that these factors could operate quite independently of the nature of the specific innovation as such.

Past research does indicate that we can make some predictions about the rate of diffusion of an innovation based on the general characteristics of a social system's norms. Such generalizations are provided by Rogers, again in the form of prototypes. Rogers projects the prototype norms of a system as being either traditional or modern. The traditional system is characterized as having a less developed technology, little communication by members of the system with those outside it. Most individuals in the system are localites rather than cosmopolites. They lack the ability to empathize or see themselves in the role of another person, particularly one who is outside the system. Members of this system are slow to recognize new roles or to learn easily new social relationships involving themselves. In this system, precedent outweighs all other guidelines to behavior, a phenomenon which Weber (1958) calls the "authority of an eternal yesterday."

In contrast, Rogers presents the modern social system as one which is typically technologically advanced with a complex division of labor. Individuals in the modern system are generally more urban and more cosmopolite in their relationships. New ideas enter this social system more freely from the outside, partly because its members frequently interact with others outside the system. Careful economic planning and the use of the most effective means to achieve desired ends also are part of the modern orientation. Furthermore, individual members within the modern system are better able to see themselves in the role of others.

We should caution the reader again against any unconditional assumption that there exist in fact social structures with all or even most of the above cited characteristics. He is reminded that the rate of diffusion is in fact dependent on a number of elements, no single one of which can be used as a sole predictor. There is ample evidence among the innovation studies to show that a particular system can have a traditional orientation, generally rejecting or retarding innovation, yet provide a favorable climate for the rapid diffusion of a particular innovation. Similarly, rejection or retardation of a particular innovation by a modern system may also occur.

Returning now to an examination of the role of the individual in a given social system, the latter's values and characteristics do of course play a not insignificant part in the way the adopter perceives his role, and the way in which his role is in turn perceived by others. Stated more simply, we are concerned here with the way an individual's orientation fits in with the orientation of the system. Using the prototypes described earlier as examples, a system with a high degree of traditional orientation is likely to regard the laggard as an opinion leader, while viewing the innovator as highly deviant and marginal to the social process of the system. In contrast, the progressive society, oriented more to the contemporary scene, often looks to the innovator for leadership, while rejecting any attempt on the part of the laggard to exert his influence. Systems which have an orientation somewhere between the two extreme positions of the traditional-modern continuum, cast both the innovator and the laggard in the role of deviant, while probably looking toward the moderate elements for leadership. A contemporary example of this is the development of the civil rights movement in the South. It would appear that more often than not the community looked to some of its more moderate members to supply the crucial leadership to the movement of which innovation was a major component.

Past studies indicate that differences in the innovativeness between individuals appear to be an inhibiting factor to the flow of influence in the modern system, preventing or at least discouraging communication between innovator and laggard, while in the traditional setting laggards might actually seek certain information from an innovator.

### Process of diffusion and adoption of an innovation

Now that we have identified some of the components which might influence the rate of diffusion of an innovation, we can put them together and emerge with a possible theoretical framework for our analysis. Again Rogers provides a good source for this purpose. To begin with, he divides the components of the theoretical system into three parts: Antecedents, Process, and Results.

Two major types of antecedents can be identified: 1) the individual's identity, including his sense of security, his dominant values, his mental ability and conceptual skill, his social status and his cosmopoliteness; and 2) the individual's perception of the situation which is more related to the social system, including the system's norms on innovativeness, economic constraints and incentives, and the nature and function of the system, e.g. farm, business or educational institution.

The process itself is divided into five stages: awareness, interest, evaluation, trial and adoption (or rejection). The nature of the information sources and the perceived characteristics of the innovation are important to the outcome of the process. It would appear that cosmopolite sources, e.g. mass media, are more important in the early stages, the individual becoming aware of the innovation mainly through impersonal sources. Perceived characteristics emerge at the mid-point of the process, the évaluation stage; at this point localite and personal information sources become more important.

The diffusion process results in either adoption or rejection of the idea. If adopted, an innovation may be used continuously, or rejected at a later date. Although Rogers does not specifically point to what we have called the "reversion phenomenon", the "experimental" adoption - which in fact cannot be considered a complete adoption at all - could be viewed as belonging in the "adoption-later-rejection" category. There is the possibility, Rogers points out, that the innovation is rejected at the end of the process, but adopted at a later date. Finally, the innovation can of course be continuously rejected.

Even our limited discussion of previous work in the diffusion of innovation we hope illustrates, when applying it to higher education, how easily a number of significant hypotheses can be generated. From such hypotheses emerges the kind of theoretical model which might help set the stage for our own investigation, and assist us in interpreting some of our findings. Thus we hope that through this preceding discussion we have developed a further perspective from which the data reported in the following chapters can be viewed.

# Chapter III.

# INTRODUCTION TO THE RESEARCH CASE HISTORY

It has been slightly more than five decades since the Russian Boris Rosing and an Englishman, A. A. Campbell-Swinton, independently suggested that cathode rays could be used to reconstruct an image transmitted electronically. This discovery was to become the cornerstone of one of the most fantastic technical developments of our century. These cathode tubes, major components in our television sets, patiently project for us the kaleidoscopic events of our world -- a world in which technology advances with incredible speed, while little progress has been made in solving the problems of human relations with which man has had to struggle since his beginning, as for example discussed by the senior author with analysts Carl Jung and Erich Fromm (Evans, 1964; 1966a).

During one year alone, this amazing electronic device was able to provide American viewers with a front row seat first at the coronation of the 267th Pope, by direct transmission from the Vatican; than at massive racial demonstrations in southern and northern metropolitan areas; and finally making them eye-witnesses to the assassination of a presidential assassin. The cathode tube continues to reflect man's greatest triumphs as well as his most disastrous failures. Yet like any technical innovation, probably beginning with the invention of the wheel, television has been viewed - even by some segments of western culture - with suspicion and contempt. It has been accused of a myriad of evils, ranging from destroying the imagination of our children to jeopardizing our judicial system. It has been referred to by some as the "boob tube", the "window on a wasteland", and been made responsible for the creation of a generation of "vidiots". In fact, of course, it is guilty of none of the offenses of which it stands accused. Like all technical innovations, it is dependent on the ability of human beings to manipulate it to their advantage, rather than to misuse it. Its potential for either good or evil staggers the imagination.

### Instructional television as an innovation in higher education

Our research case history focuses on one particular use potential for this modern system of communication, namely television as a teaching device at the college level. As we pointed out in the preceding chapters, diffusion of technical innovations in the field of education in general has been slow and always accompanied by suspicion and hostility. We found Instructional Television (ITV) to be no exception.[1] Although we are aware that at the present time a considerable number and variety of universities are offering telecourses, both open and closed, virtually all teaching institutions which have attempted to use TV have encountered some difficulties. Undeniably the possibility exists that ITV may become institutionalized in some of these; but the findings of our research case history and reports from the nine universities at which this question was explored, do not auger well for those who favor ITV as a permanent teaching method in the university.

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[1] Extensive observations relevant to this point will be found in Chapter VIII, which reports on some of the reactions the authors received during their visits to nine other universities, and in the tables in Appendix 9which reports studies of ITV at four other universities.

Such resistance seems to fall into two categories: 1) an apathy or perhaps a feeling of irrelevancy concerning television as a teaching device; and 2) an outright hostility and repudiation of ITV regardless of the manner in which it is applied. The introduction to the Yearbook of Education (Bereday & Lauwerys, 1960) presents this point more concisely, if less gently: "Inventions making possible the wider diffusion of knowledge have usually been attacked by power elites - the suspicion, criticism, and denigration of radio, television and cinema by the upper classes and the most highly educated classes of today may perhaps be cited as an example."(p.8)

To the behavioral or social scientist, such fear of and hostility toward innovations on the part of individuals or whole societies is not a new phenomenon. While some social scientists examine the social structure to find explanations for it, the social psychologist - as pointed out in the preceding chapter - tends to examine more closely the behavior of the individual within that structure. Thus he has been able to demonstrate that the individual's perception of one item in his environment is conditioned to a large extent by the feelings he has toward other items. It is likely that such feeling may be rooted in a highly complex network of fears, suspicions and ignorance, as students of the irrational nature of attitudes have pointed out (e.g. Krech & Crutchfield, 1948).

As we will show in this report, many of the negative attitudes which educators display toward ITV are likewise not always based on rational evaluations with maximal knowledge, but rather are emotional responses to an item vaguely perceived as a threat. Nor can such accusations of irrationality be hurled only against those who are hostile to ITV. The euphoria expressed by those who see ITV as the panacea, solving all of the problems of higher education, is frequently based on equally irrational reasoning. An investigation by Rokeach, Smith and Evans (1960) suggests the possibility that dogmatic beliefs such as the ones reflected in the present study concerning ITV (either pro- or anti-ITV) can very well be as important and as powerful in the individual's frame of reference as other kinds of attitudes such as racial or religious prejudice.

In this research case history we are not concerned with supporting a case for or against the use of instructional television. In fact, we were somewhat dismayed that a preliminary report of this study (Evans, Smith, & Colville, 1963) was perceived by a few of the readers as attempting to build a case for the use of television instruction. We hope that at the outset the present report will not be perceived in this sense. However, we are operating under the premise that the extent to which television can provide some of the answers to some of the problems facing American higher education in the second half of the twentieth century, is in part governed by the attitudes of administrators, teachers, and students toward employing it in the university instructional system.

Although there have appeared in recent years a number of explorations into the values, attitudes and beliefs of the university professor, some of which were briefly mentioned in the introduction

Chapter 1, these appeared to be for the most part, although often extremely interesting, rather limited in scope and were too often non-research based. Extensive empirical investigations of values, beliefs, and attitudes involving members of university faculties as subjects have apparently been only rarely undertaken.[2] Furthermore, although there have been some investigations of faculty attitudes toward Instructional Television (ITV) in particular,[3] these have frequently been limited to a relatively simple descriptive level of analysis. In fact, Kumata (1960) referred to such research when he stated: "There is a tendency for research to be an afterthought to instructional television efforts. Except in a very few studies, a true partnership between performance and evaluation does not exist." (p. 235)

## Review of aims and research questions

Aside from viewing faculty reactions to instructional television as an interesting case history in the social psychology of innovation, the study was designed to accomplish three major goals:

1. To examine certain interesting attitudes and values of an urban university faculty in general, and to provide a specific analytic focus on ITV attitudes.

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[2] E.g., the writers have recently become aware that such a study is currently being undertaken by the Association for Higher Education of the National Education Association.

[3] A representative sample of these is shown in Appendix 9.

2. To evaluate techniques of overcoming ITV resistance in a departmental group, as a means of testing hypotheses implicit in certain social psychological theories of attitude change.
3. To examine, by the use of a battery of tests, interviews, and analyses, the relationships between _general_ faculty attitudes and _extreme_ attitudes toward ITV.

In the pursuit of these three basic goals, answers would be sought to the following questions:

1. What is the nature and extent of attitudes held by a university faculty toward the prospect of teaching by television?
2. In what way are these ITV attitudes interrelated with other attitudes and values inherent in the university social and intellectual climate?
3. In what ways are professors who are strongly favorable to teaching by ITV different from those who are strongly hostile to ITV?
4. As a theoretical exploration of the dynamics of attitude change, to what degree can a "forced compliance" situation, as defined by Festinger (1957), consisting of an ego-involving participation by a group of faculty members in the use of instructional television, modify their attitudes toward ITV?
5. What promise does the video-tape recorder, as used in the faculty participation situation described above, hold as an improvement-of-teaching device?

So, in short, aside from its relevance as an example of the diffusion of innovations in higher education, the research case history deals with a more extensive and empirical social psychological exploration of the values, attitudes and beliefs of a faculty than is reflected in the publications to which we referred earlier. The present investigation was further directed toward exploring the conditions which might precipitate the modification of attitudes toward a perceived innovation, namely teaching by television.

The investigators had no illusions about the difficulties that might be involved in their task. Unlike the natural scientist, who observes the behavior of certain material in a test tube with complete detachment, social psychological investigations like the present one always involve interaction between the investigators and the subjects whose behavior is being observed. Factors such as these are greatly accentuated when we are dealing with an exploration of controversial attitudes. Thus it was clear that the hostile attitudes toward ITV on the part of the faculty - who frequently perceived it as a "threat to job security" - would make them suspicious and hostile to any attempt to "intrude" into their privately held opinions and to attempts to manipulate their attitudes. McKeachie (1962) points to this problem when he says: "Since some college faculty members are anxious about technological unemployment and resist innovations, research has often been used as a technique of infiltration, rather than as a method of developing and testing theory." (p. 342) The reader may perceive parts of the present research case history as being simultaneously directed toward both testing theory and "infiltrating". Obviously, the present investigators did not have the latter goal in mind. Unfortunately, apparent infiltration was an inevitable result of the methodology necessary to test hypotheses in the theoretical framework which was used.

It must also be pointed out that the investigators were themselves members of the university community. Therefore, although we extended all possible effort to approach the investigation with a high degree of objectivity, by the very nature of the research methodology employed, we left ourselves open to criticism by those unfamiliar with the intricacies of research in the behavioral sciences.

For this reason, the methodology employed in this research case history was executed with the greatest possible care to minimize the evoking of hostility or ego-threat to our respondents.

## Instruments, methods and techniques

Let us now move to a general examination of the design of the study and the instruments which were used. Chronologically the investigation began with an initial questionnaire, sent to the entire full-time faculty of Metro University. This instrument consisted of three major parts. The first section requested information concerning the professional and academic background of the respondent, and certain other items of a biographical nature.

The second section consisted of thirty concepts which were designed to elicit attitudes toward a representative array of items implicit or critical within the total university situation. Five of these were directly related to instructional television (ITV); the rest it was thought might or might not bear an indirect relationship to these ITV attitudes. Included among these latter concepts were night students, athletic scholarships, emphasis on research, state support for the University, and others.[2]

This second section of our instrument utilized an especially adapted form of the Semantic Differential designed by Osgood, Suci and Tannenbaum (1957).[3] This technique is widely used in psychological measurement. It requires the respondent to rate a particular concept as being more closely related to one or the other of sets of bi-polar adjective pairs, such as bad-good, rough-smooth, etc. Each concept for which an attitude is solicited is rated on a sequence of such adjective pairs, which on the basis of a systematic analysis have been demonstrated to be the most fundamentally meaningful for the individual. Each adjective pair has a seven-point scale, three points to indicate the degree for each of the opposing dimensions, and a theoretical neutral point, indicating that neither adjective has a connotation related to the particular concept.

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[2] For a complete specimen questionnaire, see Appendix 1.

[3] We wish to thank Dr. Charles Osgood for the valuable suggestions he made concerning the use of the Semantic Differential prior to the beginning of the project.

One sample item and its scale is reproduced below:

Metro University becoming a state university

good_____:_____:_____:_____:_____:_____:_____bad

By using this standardized, quantifiable method, it is possible to assign measurable valences for each subject from his response to each concept. The Semantic Differential also has clusters of adjective pairs designed to provide measures for different components of meaning. Previous factor analytical analyses of data obtained by this technique have revealed at least three such components for which such separate scales are relevant. It provides an Evaluative Scale, expressed by adjective pairs such as good-bad; a Potency Scale, expressed by adjective pairs such as weak-strong; and finally, an Activity Scale, which might be expressed by the adjective pair slow-fast.

The scales for the present study were selected from a compilation of such adjective pairs (Jenkins and Russell, 1958), for which factor loading has been determined, i.e. the extent to which each pair contributes to the variability of the response. The criterion for the choice of the particular pairs was, of course, their relevance both to the specific ITV-related concepts and the more general items of local importance to the university community, as well as the relative size of their factor loadings. The scales selected were:

Evaluative Scale

Good______________________________Bad

Dishonest______________________________Honest

Unfair______________________________Fair

Unpleasant__________________________Pleasant

Worthless___________________________Valuable

Potency Scale

Rough_______________________________Smooth

Weak________________________________Strong

Soft________________________________Hard

Activity Scale

Passive_____________________________Active

Slow________________________________Fast

As part of another section of the study, all of the Semantic Differential responses were subjected to a factor analysis, a statistical method that attempts to ferret out - from large groups of responses to diverse concepts - those which are interrelated or overlapping and basic, thereby identifying attitude determinants which underly such clusters. Although this analysis was completed to provide us additional insight into the nature of response constellations as mentioned earlier, it also allowed us to further validate our use of the Semantic Differential in the context of our research case history. This portion of the study is reported in detail in Chapter V.

In the third and final section of the faculty questionnaire, respondents were asked to indicate which methods from a list of fourteen teaching methods they favored for use in large-enrolment introductory courses; and which techniques from a list of various techniques they employed in the evaluation of student performance. Two of these were related to ITV.

Each of the items in the Initial Questionnaire was selected in terms of an effort, on the basis of staff judgment, to arrive at as many facets as possible of the total university teaching situation, which would reflect various values and attitudes of professors with respect to the teaching situation, and the range of teaching techniques which they employed. Prior to administering the instrument to the total faculty, the questionnaire was administered to a sample of young psychology instructors who were asked to critically evaluate the instrument. On the basis of their suggestions, a second form of the instrument was developed and likewise evaluated.

Although from the outset the study was not designed to study students' attitudes extensively, a group of 45 students enrolled in an introductory psychology course were asked to respond to a slightly modified version of the last two sections of the instrument, so that comparisons of faculty and student attitudes could be made on some items, even if in an exploratory manner.

We realized that even this administration of our initial questionnaire was unique in the university context and so might not yield a very high return from faculty members without a special effort on our part. With such effort we were fortunate enough to obtain a return from eighty percent of the total faculty, 319 out of 400. This special effort involved obtaining permission from the Dean of Faculties to administer the instrument (as is normally the case with such materials, the Dean's approval was indicated on the face of the instrument); and by personal contact repeatedly encouraging returns from faculty members who were slow in returning the completed questionnaire. Since the "no return group" was so small, the data obtained were probably representative of the entire population. (Even though no study in depth of the "no return" group was attempted to determine the possibility of atypicality, simple demographic analyses of this group as compared to the "return" group suggest it probably was not atypical.)

The next step in the procedure was the selection of two antipodal groups on the basis of their responses to the specific ITV questions. Analysis of the questionnaires showed that the concept Television in large enrolment classes evoked the most unqualified reaction on the good-bad, weak-strong, and valuable-worthless scales. Therefore this question became the basis for establishing two extreme groups:

| | |
|---|---|
| Pro-ITV's | (55 faculty members most favorable to instructional television) |
| Anti-ITV's | (65 faculty members most hostile to instructional television) |

Imbedded within the two above groups was a third one we will designate as our experimental group (EXP-ITV). Its 20 members represented two departments in the College of Arts and Sciences. These departments were selected for the experimental portion of the study to be described later because they had in the past rejected official overtures from the Administration to use ITV in their required, large enrolment, introductory courses. As a result of extended explorations made by the senior investigator prior to the beginning of the investigation, these two departments agreed to participate en masse in the experimental-operational phase of the study. These twenty professors (nine members of one department, eleven of the other) made up the group which would ultimately be involved in the experimental phase of the research case history. A more detailed description of this phase of the study will be presented in Chapter VII. For the present it is important for the reader to keep in mind that this was one of the experimental groups which would provide the data for testing some of our attitude change hypotheses.

To supplement our self-administered initial questionnaire, two face-to-face interview schedules were developed to be administered prior to and after the experimental phase. Some of the typical guidelines described by Maccoby and Maccoby (1954) were utilized. These interview schedules were carefully designed to elicit through standardized open-end, fixed-alternative and projective questions, more intensive responses from the Anti- and Pro-ITV groups concerning their values, attitudes, beliefs, and certain other personality characteristics. Because of their particular relevance, in the case of the items in the instrument dealing with teaching machines and instructional television, a special adaptation of a "cognitive role-playing" device designed by Evans (1952) was used. This is an indirect measure of attitudes, which hopefully eliminates some defensiveness in respondents.

Before administering these instruments to our subjects, the interview forms were pretested on a group of six young instructors in psychology, and their critical evaluations of the instrument were sought. In the light of these critical evaluations, the instrument was revised and constructed in a final form. Because of the unusual nature of our sample, a team of three clinical psychology professors were recruited to complete the interviews. Using this instrument, these clinical psychologists completed personal interviews with each of the professors in the Anti- and Pro-ITV groups.

Analysis of data obtained in the interviews was handled in terms of the typical procedures described by Berelson (1954). Three members of the research staff who were psychology graduate students served as the original coding group, as a first step in the content analysis of the responses. These coders independently set up response categories for the open-end interview responses. The three raters then met together and, on the basis of independent external criteria, determined to what degree their response categories were consistent with one another. It was found that to a surprising degree the raters had arrived at very similar response categories. Therefore, after the categories were subjected to a few more trial and error modifications, certain categories seemed to emerge as being adequate.

Using these established response categories, the three raters again coded the Pre- and Posttest Interview responses. Occasionally there were times when certain responses could not easily be coded.

In these cases it was arbitrarily decided that where there was an agreement pattern of two out of three, this would be considered adequate. It was interesting to note how infrequently this kind of arbitrary decision was necessary; the response categories set up by the research staff coding group seemed to be quite adequate. The overall agreement in coding between the three raters of the Pretest Interview was 76.6%, and for the Posttest Interview, 78.5%.[4]

## An introduction to Metro University, its students and faculty

A brief description of the history and present complexion of the Metro University community may help to give some basic orientation to the total study, and at the same time may set some limits for the generalizability of the findings. Metro U. is located in a rapidly growing urban area in the southwestern part of the United States. Its growth and development have not been atypical for institutions of higher education in such environments. It had its humble beginning in the late twenties as a junior college, a sort of adjunct to the local high school, and was controlled by the local school board. Its rapid growth, coupled with competent leadership, resulted in accreditation as a full-fledged university in less than ten years. Later the University was divorced from the public school system, acquired financial endowment, and came under the control of its own board of trustees. At the time of this study it received some state support, and there was increasing sentiment, both among its own staff and within the community at large, in favor of seeking full state support -- a change which has since been obtained. It was generally anticipated that such a transition would bring with it a reduction in the tuition charges and hence an increased enrolment. This conjecture was confirmed by later developments; enrolment increased by fifty percent during the first year of state support.

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[4] Samples of the pretest and posttest interviews and response categories appear in Appendix 2 and Appendix 3 respectively.

For purposes of this study it is also important to point out that in 1953 Metro University began the operation of an educational television station. That summer the first credit course, an introductory psychology course, was broadcast. During the first year there were nine instructional courses. More recently the telecourses included three freshman courses - biology, mathematics and psychology - and three sophomore courses - English, accounting, and political science. All of these were credit courses requiring the students to watch two television lectures and to attend one class session per week. Some four to six thousand students a year were instructed by this method. However, in 1964 all university telecourses were terminated, for lack of adequate state support of the television system. As will be pointed out later, such eventual termination is a typical pattern in most universities which began television courses, but of course for ostensibly differing reasons.

At the time of the study, Metro U. was attended by approximately 13,000 students who were instructed by a faculty of around 400 full-time members. As is fairly typical for institutions of this type, most of the students lived at home, or at least resided off-campus, many working in the community, and their age was above that found normally on a resident college campus.

Since our investigation is focused primarily on the university faculty, the general description above is sufficient to give a picture of the setting for our study, permitting us to turn now to a more detailed analysis of the characteristics of the University's instructional staff.

Responses to the initial questionnaire provided considerable insight into the general characteristics and professional status of the faculty at Metro U. Again it appears as though the composite picture is not unusual for the relatively young, urban university. Eight out of ten of those who responded to the questionnaire were males, their average age was 40, and on the average they had 2.75 dependents. They carried a teaching load averaging ten and one-quarter semester hours, with twelve hours given as the most frequent. It is interesting to note here that although fifteen respondents failed to answer the question concerning age, thirty did not respond to the question about their teaching load. Half the faculty had less than ten years' teaching experience, although the average was slightly above thirteen years. There were only 11% who had not earned a degree higher than the baccalaureate, while 42% had earned a master's degree and 47% had earned their doctorate.

Slightly over one-fourth of the respondents held the rank of professor, less than one-fourth were associate professors, less than one-fourth assistant professors, and almost one-fifth were instructors.

Another index for measuring academic and professional status, one which has gained considerably in importance in recent years, is the degree of the faculty member's contribution to professional journals and participation in professional organizations. Of those who responded to questions concerning these activities, about one-half reported that they had published from one to 78 papers with an average of slightly over 6; and again,over one-half had presented papers at professional meetings, the number of these ranging from one to 30, with an average of five.

With this brief thumbnail sketch of Metro University and its faculty, we hope that we have conveyed to the reader something of the background against which our research case history should be seen. Although no two institutions are precisely alike, of course, we feel that Metro U. is fairly similar in many respects to other urban centers of higher education.

# Chapter IV.

# GENERAL ATTITUDES OF METRO UNIVERSITY'S FACULTY

By now the reader has undoubtedly become aware that although our research case history focused on the analysis of resistance to ITV, it explored a far broader spectrum of faculty attitudes related to many other aspects of the college professor's environment. Thus it seems appropriate that we begin our presentation of the empirical data with an examination of those findings which reveal something of the general attitudinal patterns of the faculty, and thereby provide the context for the interpretation of specifically ITV-related data to be presented in the next chapter.

However, before we report our data, we should again caution against overly literal interpretations of "images" which are deduced from statistical analyses. Rarely even in statistically significant relationships is all the variance accounted for, i.e., perfect relationships are not very often found. Consequently, patterns of interpretation which are reported are often merely probabilities that certain interesting relationships exist. Furthermore, some of our interpretations of the data are relatively subjective, especially when the results revealed relatively low order relationships, similarities, or differences.

The data which form the basis of our discussions in this chapter on general faculty attitudes came from three sources within our study: the initial self-administered questionnaire, and the Pre- and Posttest personal interviews. To provide a more readable presentation of our findings, we have separated the clearly ITV-related responses [1] from those which, on the surface at least, appear to be unrelated to ITV, and will present these in the following chapter. Furthermore, although we have often combined the data from the three sources, the reader will recall that the data gathered from the questionnaire represent virtually the entire faculty, while the data collected through the interviews represent only the extreme Pro- and Anti-ITV groups. We hope the necessary distinction between the sources of the data is made clear by identifying the interview responses. Although we do now and then allude to some of the clear differences between the responses of the Pro- and Anti-ITV groups, a detailed discussion of these differences will be found in Chapter VI.

## The faculty personality

Contemporary social psychological theory (e.g. Krech, Crutchfield and Ballachey, 1962) suggests that few if any of an individual's attitudes exist in complete isolation, although they do vary a great deal in the degree and patterns in which they are intercorrelated. Often we find that a person's values, beliefs, opinions and attitudes tend to form clusters which include interrelated values, beliefs, opinions and attitudes directed toward a variety of social objects, some alike, some different. For example, in the early work on authoritarianism (Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950), attitudes toward various minority groups were related to various political attitudes. It would be greatly oversimplifying, however, to say that such a constellation of values, beliefs, opinions and attitudes always forms a unified whole, although the degree to which there is unity may be indicative of the degree of consistency of the individual's ideology. At the same time there is considerable evidence of conflicting attitudes, even toward the same item. Some writers (e.g. Krech & Crutchfield, 1948) have referred to some of these inconsistent attitudes as "logic-tight compartments". For example, someone may assert the belief that all persons should have equal rights, but in even a slightly different context appear to believe with equal firmness that the rights of some should be abridged.

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[1] A comparison of Pre- and Posttest ITV responses appears in Appendix 4.

In recent years there have been numerous investigations which have attempted to show that one of the basic personality traits which affect a person's perception of social objects is the extent to which that individual relies upon authoritarian or equalitarian beliefs. The earlier-mentioned work in authoritarianism (Adorno et al., 1950) identifies, for example, rigid adherence to and exaggerated concern for conventional middle-class values, condemnation and rejection of those who violate conventional values, preoccupation with figures of authority and power, and hostility toward members of outgroups, as personality traits which are interrelated and contribute to high authoritarianism.

It appeared that it might be interesting to explore, even peripherally, this personality dimension among the respondents in our research case history. We felt that an examination of the authoritarian-equalitarian dimension in our respondents might suggest some characteristics which might conceivably be related to faculty attitudes toward innovations such as the one we considered, instructional television. Hence two projective questions from the California Group study were included in the Pretest Interview schedule, items which appeared to be at least peripheral measures of authoritarianism. We felt that these items could easily be adapted to our instrument and would be minimally offensive to our respondents. They were:

"What great people both living or dead do you admire the most?"

"What experiences give you the greatest feeling of awe?"

The responses were content analyzed, using as a base the categories suggested by Adorno et al. (1950).[2]

In response to the first question, according to the categorization based on our content analysis, 59 respondents were classified as ranking high in authoritarianism, while 35 ranked medium and 24 low. In response to the second question, 47 ranked high, 47 ranked medium, while again 24 ranked low. However, using only two items dealing with authoritarianism from a far more elaborate group of measures designed to measure this variable is admittedly a very limited procedure, so these data should be interpreted in this light.

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[2] Rater agreement, using three independent raters, was .81.

It was evident that there were no significant differences in authoritarianism between the extreme groups. However, since we had no authoritarianism data on our "middle" group (neither Pro- nor Anti-ITV), it is difficult to assess this finding, except that it suggests at least as high an incidence of authoritarianism in our faculty sample as is found in less select populations.

The Pretest Interview also included an item that elicited faculty evaluation of the original questionnaire in general and asked for their reaction to being interviewed. This evaluation was designed to generate faculty responses approximating an attitude which might be called "reaction to intrusiveness", or anti-intraceptiveness as described by Adorno et al. (1950).[3] Anti-intraceptiveness represents a lower tendency to introspect with less readiness toward gaining insights into psychological and social mechanisms of one's self and others. Adorno et al. (1950) point out that the anti-intraceptive individual is afraid of what might be revealed if he or others should look closely at himself. He opposes people "prying" into his affairs, and is equally unconcerned about what others think and feel. Instead of unnecessary "talk", he prefers to keep busy, devoting himself to practical pursuits. He would rather think about something more cheerful than examine inner conflicts. But we need to emphasize that these are not the only reasons why a person may react unfavorably to such intrusions.[4] However, one interpretation of the responses of our faculty interviewees to the administration of the original questionnaire could be an indication of anti-intraceptiveness. Since anti-intraceptiveness was also found to be related to authoritarianism (Adorno et al., 1950), the responses here tended to confirm the findings of the projective questions measuring authoritarianism. Only 75 favorable responses were given; among these the most frequent (21) was that they liked the questionnaire because it was easy to answer, clear and easily understood. Against this, 198 responses were counted representing dislikes of the original instrument. Eighty-four professors disliked the questionnaire because it was ambiguous, confusing and unclear. In part this reaction was due to the indirect nature of the Semantic Differential as described by Osgood et al.(1957). In fact, it was surprising that so few respondents reacted to the ambiguity of the instrument.

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[3] The authors learned recently that this construct forms the basis of some ongoing research by Daniel Levinson at Boston Psychopathic Hospital.

Further data concerning the individual behavior of our respondents in the interviewing situation was provided by the summary ratings of the respondents by the interviewers of both the Pretest and the Posttest Interviews. For this purpose, three 9-point a priori scales designated by the investigators recorded interviewers' estimates of the dimensions of secure-evasive, tolerant-hostile, and sophisticated-bland. A value of 1 was assigned to the first concept in each of the dimensions, and nine for the second. Independent ratings of these interviewer summaries by three raters showed high inter-rater agreement coefficients of .77.

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[4] Proshansky & Evans (1963), dealing with political extremist groups, recognize that reaction to intrusiveness should not be interpreted as being necessarily "bad". Obviously there can be rational reasons for resenting such perceived intrusions of one's privacy.

The mean of these ratings for each dimension ranged from 5.28 to 5.47. Since 5 was a neutral point, of course, this indicated that the respondents in the interview situation were only slightly evasive, hostile and bland. When these data are considered in the light of the generally expressed hostility toward the intrusion of psychological interviews by many of the professors, as indicated by the anti-intraceptiveness data presented earlier, it is a tribute to the skill of our interviewing staff that this fairly high degree of apparent cooperation was obtained.

It is undoubtedly clear by now that the present study proceeded from the assumption that attitudes toward ITV held by most of our respondents did not exist in isolation, but that they were often interconnected in varying degrees with attitudes toward other items, such as teaching machines, teaching methods versus content, and even the respondent's attitude toward himself and his general philosophy of life. A clearer picture of these relationships will emerge from the factor analytic data reported in the next chapter. These data will also point to some apparent inconsistencies in the attitude structures of our respondents.

## The professor's self-image

Table 1 shows the overall means of the evaluative scales of the Semantic Differential from the original questionnaire.[5] The items are ranked from the most favorable to the least favorable.

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[5] A more detailed presentation of these data appears in Appendix 5 and Appendix 8.

### Table 1

### Over-All Means of Osgood Evaluative Scales

### Ranked from Most to Least Favorable

| Rank | Item | Over-All Mean (Evaluative Scales) |
|---|---|---|
| 1. | Myself Conducting a Small Class | 5.99 |
| 2. | Myself as a Professor | 5.80 |
| 3. | Myself Conducting an Advanced Course | 5.76 |
| 4. | Myself Conducting an Introductory Course | 5.67 |
| 5. | Myself Conducting a Lecture Course | 5.61 |
| 6. | Night Students | 5.49 |
| 7. | Higher Entrance Requirements for University | 5.48 |
| 8. | University Becoming a State University | 5.48 |
| 9. | Larger Salary Increases with Fewer Additional Fringe Benefits | 5.46 |
| 10. | Emphasis on Research at University | 5.39 |
| 11. | Lecture Method Supplemented by Small Discussion Sections for Large Classes | 5.38 |
| 12. | Myself Conducting a Large Class | 5.34 |
| 13. | Myself Doing Publishable Research | 5.23 |
| 14. | Training in Teaching Methods for Prospective Professors | 5.02 |
| 15. | Admitting Qualified Negroes to the University | 4.95 |
| 16. | Answering Students' Questions in Large Classes | 4.94 |
| 17. | Training in Teaching Methods for Professors | 4.87 |

Table 1 (Cont.)

| Rank | Item | Over-All Mean (Evaluative Scales) |
|---|---|---|
| 18. | Television Instruction Supplemented by Small Discussion | 4.73 |
| 19. | Frontier Fiesta (Student Activity) | 4.56 |
| 20. | Myself Conducting a Television Course | 4.42 |
| 21. | Honor Courses Consisting Only of Textbooks and Final Examinations | 4.21 |
| 22. | Teaching Machines | 4.07 |
| 23. | Television Instruction in Introductory Courses | 4.02 |
| THEORETICALLY NEUTRAL ON OSGOOD SCALES | | 4.00 |
| 24. | Athletic Scholarships | 3.99 |
| 25. | Straight Lecture Method for Large Classes | 3.96 |
| 26. | Correspondence Courses | 3.84 |
| 27. | More Fringe Benefits with Smaller Salary Increase | 3.83 |
| 28. | Additional Tuition | 3.73 |
| 29. | Television Instruction in Advanced Courses | 3.57 |
| 30. | Straight Television Instruction for Large Classes | 3.48 |

Even a cursory examination of the items relating to the professors' self-concepts shows that the Metro University faculty is, on the whole, self-confident about its instructional skills. Combining the first three items, our respondents clearly saw themselves favorably as college professors teaching a small, advanced course, while ranking the conducting of a large class, or doing publishable research, was valued considerably lower. We can note further that all of the items dealing directly with ITV are ranked in the lower half of the list, with the lowest ranking given to the ITV concept when combined with "advanced courses" or "straight". It is worthy of note at this point, though this will receive further attention later, that when the professor was asked to project himself into the television teaching situation, his opinion of the medium under these circumstances rose significantly. It appears that the "myself" component of that concept weighted the item in a more favorable direction.

In view of the fact that the faculty members thought so highly of themselves as professors, it was decided - as mentioned in the methods section - to administer a similar instrument to a sampling of students to see whether they evaluated the faculty in the same favorable light. Forty-five students in an introductory psychology class were asked to respond to fourteen items from our original questionnaire. The "myself" items were changed to read: "Most professors I have had at the University." An overall evaluation of these responses, shown in Table 2, indicates that the students' evaluation is fairly consistent with that of the faculty, at least as far as ranking goes. However, a more subtle analysis of the

Table 2A

Chi Square Comparisons of Over-All Mean Evaluative

Scale Responses of Professors and Students

| Item | Professors | Students | Chi Square | p |
|---|---|---|---|---|
| Myself as a Professor (Most Professors I Have Had at Metro University) | 5.80 | 5.60 | 39.86 | .001 |
| Myself Conducting an Introductory Course (Most Professors at Metro University Conducting an Introductory Course) | 5.67 | 5.51 | 26.18 | .001 |
| Myself Conducting a Lecture Course (Most Professors I Have Had at Metro University Conducting a Lecture Course) | 5.61 | 5.20 | 56.66 | .001 |
| Lecture Method Supplemented by Small Discussion Sections for Large Classes | 5.38 | 5.64 | 12.30 | .01 |
| Myself Conducting a Television Course (Most Professors Conducting a Television Course) | 4.42 | 4.92 | 87.82 | .001 |
| Television Instruction in Introductory Courses | 4.02 | 3.72 | 54.24 | .001 |
| Straight Television Instruction for Large Classes | 3.48 | 3.41 | 43.96 | .001 |

As the reader can see, highly significant differences in distributions were found on all 7 items tested, although the relative ranking of items was approximately the same for both groups.

Table 2B

Mean Evaluative Scale Values and Rankings of Student

Responses to 14 Items as Compared to Professors' Responses

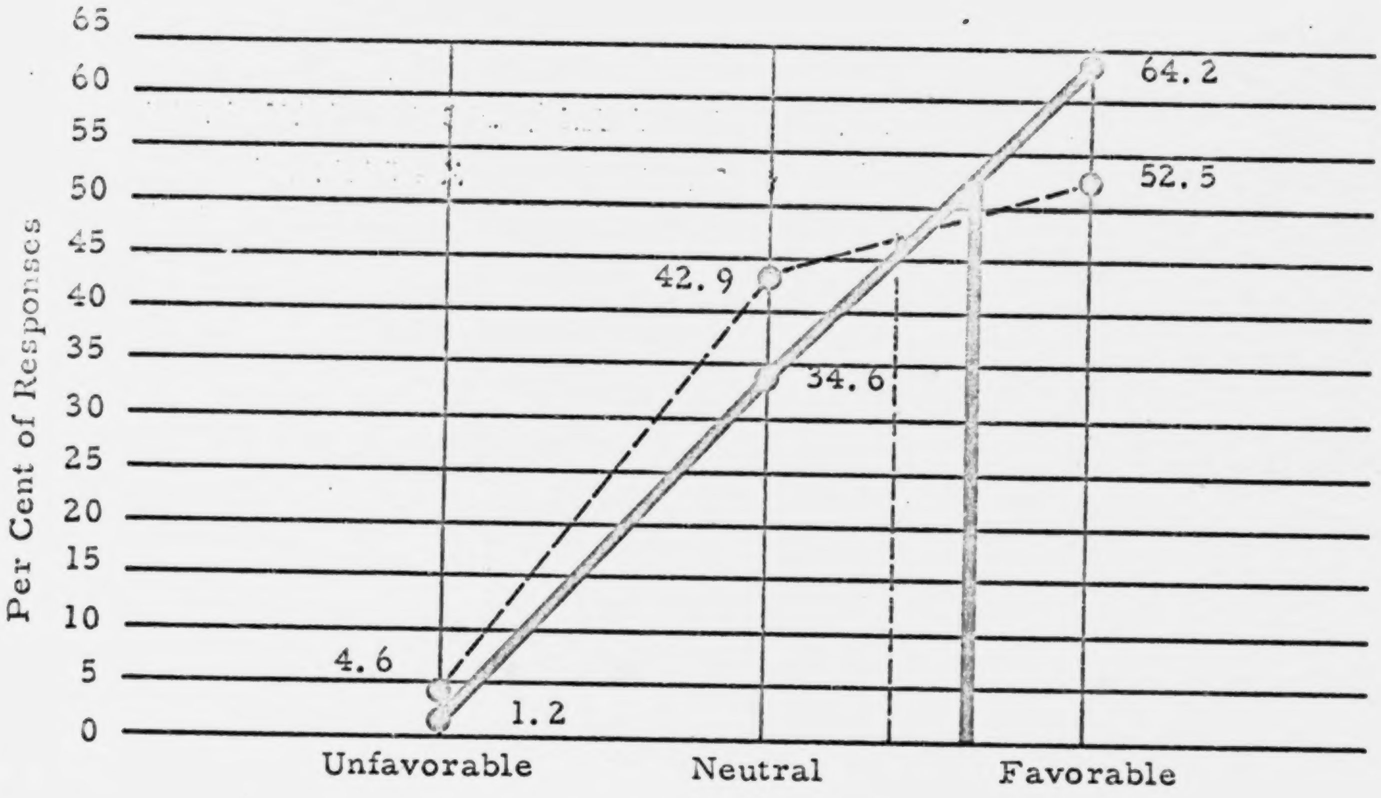
| Item | Students' Means | Rank | Professors' Means (Item in "myself" terms) | Rank |
|---|---|---|---|---|
| Most Professors at Metro University Conducting a Small Class | 6.03 | 1 | 5.99 | 1 |
| Lecture Method Supplemented by Small Discussion Sections for Large Classes | 5.64 | 2 | 5.38 | 6 |
| Most Professors I Have Had at Metro University | 5.60 | 3 | 5.80 | 2 |
| Most Professors at Metro University Conducting an Introductory Course | 5.51 | 4 | 5.67 | 4 |
| Most Professors at Metro University Conducting an Advanced Course | 5.44 | 5 | 5.76 | 3 |
| Most Professors at Metro University Conducting a Large Class | 5.33 | 6 | 5.34 | 7 |
| Most Professors I Have Had at Metro University Conducting a Lecture Course | 5.20 | 7 | 5.61 | 5 |
| Television Instruction Supplemented by Small Discussion Sections for Large Classes | 5.19 | 8 | 4.73 | 8 |
| Most Professors Conducting a Television Course | 4.92 | 9 | 4.42 | 9 |
| Teaching Machines | 4.30 | 10 | 4.07 | 10 |
| Straight Lecture Method for Large Classes | 3.97 | 11 | 3.96 | 12 |
| Television Instruction in Introductory Courses | 3.72 | 12 | 4.02 | 11 |
| Television Instruction in Advanced Courses | 3.53 | 13 | 3.57 | 13 |
| Straight Television Instruction for Large Classes | 3.41 | 14 | 3.48 | 14 |

results indicates clearly that students rate the faculty lower than the faculty rates itself. This may be seen in Figure 2 which is based on an illustrative extrapolation from the data.

## Course content and teaching methods

Now that we have something of a picture of the personality make-up and self-image of our faculty, we are ready to consider those attitudes which are more specifically related to the respondents' profession. As every college student or alumnus knows, the methods and techniques which professors employ in the presentation of material and in the evaluation of students' performance vary greatly. Our data tend to support this; furthermore, most of our respondents felt that the methods which they were using were particularly suited to the subject which they taught, and although they were aware that others were using different methods, they felt that these would not work for their subjects or their students. We find also that university professors, again not unlike other members of professional groups, tend to be conservative, favoring old, tried and true methods, and view with considerable apprehension new innovations of any kind.

Should a professor, in addition to being competently acquainted with the material he is teaching, also have training in teaching methods? This is a question which has generated some rather heated discussion in recent years. The fact is that virtually no university requires that prospective professors obtain training in teaching



igure 2. Comparison of faculty and student Semantic Differential responses to the concept: "MYSELF (MOST PROFESSORS) CONDUCTING AN INTRODUCTORY COURSE." (Solid line represents faculty responses, broken line student responses.)

methods. Presumably the assumption is that the student at this level, in contrast to the primary and secondary pupil, is capable of comprehending material regardless of how it is presented. In response to a Pretest Interview question concerning the importance of content versus method of teaching, most of our respondents apparently agreed with the prevailing opinions. Forty percent felt that knowledge of content is a sufficient prerequisite for university level teaching, although thirty-five percent felt that method was of some importance and ten percent felt that they were of equal importance. This is contrasted with the fact that only five percent felt method to be more important than content. It might be a legitimate extrapolation from these data, though this is purely subjective, that our respondents not only considered content more important in teaching at the university level in general, but further felt that, although they may lack training in methods, their content knowledge was sufficient to make them good professors. Having already climbed out on this limb, we might cautiously climb one step further to say that ITV might be seen to require knowledge of teaching methods or risking exposure of inadequate methods to the viewing audience, an audience which might include fellow faculty members and administrators. We will return to this point in the next chapter.

Does this mean that teaching methods were unimportant to the Metro U. faculty? It would be erroneous to say so. As a matter of fact, the professors placed training in teaching methods for professors and prospective professors fairly high on the evaluative scale, with means 5.02 and 4.89 respectively. This indicates some considerable concern about method in spite of the heavy emphasis on content.

Our original questionnaire probed more deeply to find specifically what the preferred teaching methods were, and again the instructors' rankings were compared with those of a group of forty-five students in an introductory psychology class. Table 3 shows these preferences in order from the most to the least preferred. These results clearly indicate a preference for the methods which cast the professor in his traditional role: standing before the class, giving a lecture, using the blackboard, assigning some outside "homework", and occasionally giving a classroom demonstration. The only surprising factor in the ratings of these methods is the relatively high rank occupied by motion pictures, these being ranked fifth. Perhaps this is an indication that here is a medium innovation which has achieved some degree of acceptance. On the other hand, television lectures and teaching machines were again rated lowest.

Apparently the students are pretty much in agreement with their mentors as far as these methods are concerned. Their ratings, with the exception of outside work or readings in addition to textbooks, would indicate that they are satisfied with the methods by which material is presented to them. It should be observed, however, that students rated class demonstration above all other methods, and rated television lectures slightly higher than did their teachers.[6]

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[6] Because these students were selected from one particular section of a specific course, introductory psychology, it must be emphasized that they do not in any sense constitute a representative sample of students in general or even students enrolled at Metro U.

Table 3

Comparison of Professor and Student Preferred Teaching Methods (Preference in order from most to least. Ranking of 1, most used and favored; 2, next preference; etc. See APPENDIX for frequency counts.)

| Teaching Method | Instructor Rating (n=319) | Student Rating (n=45) |
|---|---|---|
| Classroom lectures | 1 | 2.5 |
| Use of blackboard | 2 | 2.5 |
| Outside work or readings in addition to textbook | 3 | 9.5 |
| Class demonstrations | 4 | 1. |
| Motion pictures | 5 | 4. |
| Supplementary small discussion | 6 | 5. |
| Guest instructors | 7 | 6. |
| Slides | 8 | 12. |
| Supplementary viewing (occasionally) of ITV | 9 | 8. |
| Fields trips | 10 | 7. |
| Private tutorial sessions | 11 | 9.5 |
| Socratic method | 12 | 14. |
| Television lectures | 13 | 11. |
| Teaching machines | 14 | 13. |

Teaching machines

One item concerning teaching methods deserves a more detailed analysis, namely that of teaching machines. It appeared to the investigators that these devices would not be unrelated to ITV as a focal point of faculty resistance. It will be recalled that in response to this item on the original questionnaire, our respondents ranked teaching machines lowest among the teaching methods they preferred, even lower than television lectures. When the concept appeared among the thirty Semantic Differential items, it was again ranked barely above the theoretically neutral point, with an evaluative mean of 4.07. The graphic presentation in Figure 3 shows how closely to the neutral point this item was rated in all dimensions.

The lack of variability within these results seems to indicate the probability that our Semantic Differential scale was not an adequate tool for the measurement of this item. On the other hand the provocative responses resulting from the inclusion of questions on teaching machines in the Pretest Interview suggest a considerable variability in the respondents' feeling toward teaching machines. Of the 120 interviewees in the Pro-ITV and Anti-ITV groups, 67 were opposed to such devices, while 29 favored them, and 24 held no opinion. To get at the reasons for faculty resistance to these teaching devices, the interviewers probed more deeply.

Instead of simply asking the respondent how he personally felt about teaching machines and why, the special role playing device developed by Evans (1952) and mentioned earlier in this report, was

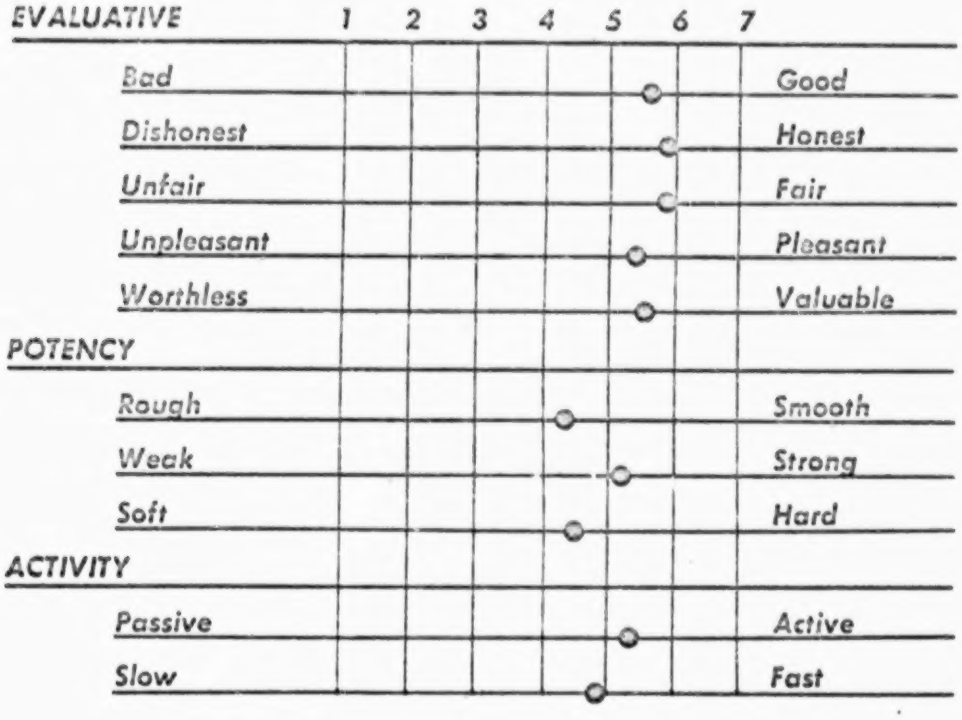

Figure 3. Graphic representation of mean scale values for the Semantic Differential concept: "MYSELF AS A PROFESSOR."

adapted for use in the present investigation. The "quasi-role-playing" technique consists of what we might call "cognitive role-playing": the respondent is asked to imagine himself first opposed to some social object, and then is asked to imagine himself in favor of the same object. It was decided that this technique was appropriate for investigating both the teaching machine and the instructional television items. It became apparent that this technique permitted a wide range of expressions of faculty attitudes, theoretically more revealing than would have been possible using a more direct measurement device.

To begin with, the interviewees were asked if they were acquainted with teaching machines; if they indicated they were not, they were given a short, simple description. These devices, it was explained, present a series of problems or questions to the student, and after he has attempted to answer them, they provide the correct answer automatically. The student proceeds at his own rate. Later material cannot be understood without learning the earlier material. The machines are usually built in such a way as to provide a permanent record of the student's work. After this explanation, the respondent was asked to consider himself first opposed to teaching machines and then in favor of them, stating in each case as many different reasons as possible for favoring or opposing their use.

While imagining themselves in favor of teaching machines, the instructors offered 269 responses. About half of them felt that these devices might be good for drill and practice, and that by reaching more students the teacher shortage might be overcome. About one-fifth felt that the machines provided dependability and a method for more standardized teaching. On the other hand, when our respondents imagined themselves as being opposed, they were able to think of 290 reasons why one might oppose such devices. Most of them, nearly three-fourths, felt that the machines are too impersonal and provide no opportunity for discussion, while about one-fourth felt that they won't motivate students and can only handle facts, lacking any sort of creativity. Clearly these reasons for opposition to the machines show dimensions on a pole opposite to the "myself" dimension discussed earlier. In effect our respondents were saying: "The machine cannot provide those ingredients which I, myself, can provide. I am personal and provide discussion, I motivate students, and I am creative." Undoubtedly the quasi-role-playing technique was most valuable in soliciting this great variety of responses.

### What is university-level teaching?

As with other questions which the investigators felt had a major bearing on the central purpose of our study, an attempt was made to validate the responses to the fixed alternative questions with "open-end" questions during one of the two interviews. In addition to testing the validity of our original instrument in this way, we were provided with further information which could not have been obtained by the fixed alternative questions. Hence one of the questions asked in the Posttest Interview was: "What do you believe good university-level teaching really consists of?" There were

287 responses given to this item. Among the most frequent ones were, again as before: "The teacher should know content and keep up with research," given by 63 respondents; for 55 good preparation and use of methods were essential. Pleasant personality and interest in students was given by 43, while 36 felt that a good teacher should inspire his students. Considerable doubt exists as to whether students would agree with this hierarchy of attributes being prerequisite for good university teaching. Evans (1962), using a representative sample of university students, found that "ability to communicate" was the single most important characteristic that students sought in an instructor. Factors such as research by the professor were considered far less important.

Continuing along this same line of thought, the interviewers then moved to another quasi-role-playing question. "Supposing you were the dean of a college," they asked, "and you wished to improve the teaching faculty. What approach would you take to this problem?" "Give reward of money and recognition," was the method proposed by 48 respondents. Forty responded with: "Hire competent teachers;" while 28 would "Require refresher courses and further study." "In-class observation and approval of lesson plans" appeared to be of value to 22; while 18 proposed that they would "Gather student opinions." Interdepartmental meetings and group discussion was suggested by 16. Interestingly enough, and perhaps quite disturbing in the light of our investigations, this question elicited only one response category which was even slightly related to ITV. There were 12 responses which suggested "Use of audio-visual aids, including television." Obviously, even the strongest proponents of ITV did not visualize its use in the context of improvement of teaching. Perhaps most disturbing is the fact that there were 16 who stated that it was not possible for them to improve the teaching faculty.

### Evaluation of student performance

Actually the student is far more concerned with his professor's method of evaluating student performance than with his teaching mothods. At least at the undergraduate level, questions asked during the first session of each semester are sure to deal primarily with the way in which the instructor will test for retention of the material to be covered. How much will each quiz count? How much will the term paper count? How will the midterm exam be weighted as compared to the final? Will these tests contain mostly essay questions, or so-called objective questions? Does spelling count? These are some of the questions which every instructor must answer during the first session. In fact, of course, this preoccupation with grades among undergraduates is not without justification. For not only must he maintain a satisfactory grade average to remain in college, but if he has any plans for further professional training after his baccalaureate, he knows that most graduate schools still consider past performance as shown on his transcript the best predicter of future performance - in spite of the fact that national aptitude tests, such as the various Graduate Record Examinations, are also important in gaining admission to graduate school. But what should be the criteria by which a professor evaluates student performance? Which aspect of performance should be measured? So-called objective tests provide some indication of the student's ability to recognize and discriminate items learned, but generally require little or no original thought. They are easy to correct; for large classes they can even be machine scored, and grading can be on a purely objective basis. It is not surprising, then, that both faculty members and students rated this method highest. As a matter of fact, Table 4 shows that there is again amazing instructor-student agreement. Most surprising, perhaps, is the consensus on ratings of essay tests (both professors and students rated them "low"), which one would assume would be ranked higher by instructors and lower by the student, because they require that the student recall, rather than recognize, the material and also give some indication to what extent the student has integrated the new material with his existing knowledge.

Less surprising were the differences of opinion on attendance, English usage, and promptness in completing assignments. While the student thinks attendance ought to be among the most important criteria, the professor ranks promptness in completing assignments and three other items ahead of attendance. However, the student feels promptness in handing in assignments ranks only 8th in the list. English usage occupied the middle slot of the rank order list for the

Table 4

Comparison of Professor and Student Preferred Evaluation Criteria (Preference in order from most to least. Ranking of 1, most used and favored; 2, next preference; etc. See APPENDIX for frequency counts.)

| Method of Evaluation | Instructor Rating (n=319) | Student Rating (n=45) |
|---|---|---|
| Objective tests | 1 | 1.5 |
| Promptness in completing assignments | 2 | 8 |
| Showing improvement | 3 | 5 |
| Essay tests | 4 | 4 |
| Attendance | 5.5 | 1.5 |
| Attitude | 5.5 | 7 |
| English usage | 7 | 11.5 |
| Themes or term papers | 8 | 3 |
| Spelling | 9 | 6 |
| Class recitation | 10 | 9 |
| Neatness | 11 | 13 |
| Tardiness | 12 | 11.5 |
| Extra work to raise grades | 13 | 10 |
| Oral examinations | 14 | 14 |

professor, but the student ranks it as one of the least important criteria for evaluating performance.

The other large discrepancy occurred in response to the item, "Themes and term papers." Again, from the professor's viewpoint, these are not easy to evaluate and undoubtedly require more time than the faculty felt they had available. This may not indicate a judgment of this method per se, but rather a rating dictated by practical considerations arising from the size of their classes.

In summarizing our findings concerning teaching and evaluation of students, we can say that we found few, if any, surprises. College professors see themselves in the traditional role of standing before a class, delivering a lecture on which his students take notes, which they are expected to commit to memory, supplemented by readings in the textbooks and some additional readings in the library. Periodically the student is expected to reproduce some of this material, preferably in an easy-to-score test of recognition and discrimination. It is more important to the professor that the student complete his assignments on time (perhaps this is because late papers and make-up exams require extra time) than that the student be conscientious in attending class sessions, which has little effect on the time of his mentor. The student, on the other hand, feels that he should receive some reward for faithful attendance and should not be judged too harshly when, for reasons perfectly justifiable to him, he turns in an assignment after the announced deadline.

## The faculty and the university

Unlike most professional men, e.g. physicians, lawyers, etc., the college professor is a salaried employee of his institution. However, unlike most salaried employees, the relationship to his employer is a highly complex one. There is no need to review here in detail the hierarchical structure of large educational institutions, with its clearly defined roles for each member, beginning with the classroom teacher and reaching to the board of trustees, or - in the case of state-supported schools - to the state legislature. Again, unlike most employees, the university professor has an unusually high vested interest in the "business" of his employer. His professional status depends to a large extent on the status of the university; its fate and his are frequently closely intertwined. The school's academic standards add to his prestige, and the total research produced by his fellow staff members within the university community increases his stature, quite independent of his own involvement in such research. An investigation of faculty attitudes toward university policy should therefore prove revealing and highly relevant to the purpose of the present study.

In many ways the policy problems which confronted Metro University were fairly typical of most similar institutions, as we will see in a later chapter which deals with the generalizability of our data. There was one fairly unique problem facing Metro U. at the time of our study, namely whether it should become a wholly state-supported institution. Such a move would profoundly affect the complexion of the institution. Undoubtedly the substantial decrease in tuition would result in a sharp increase in applications which would not only increase enrolment, but - by supplying a greater pool of applicants - might provide the University with better qualified students. Certainly the financial position of Metro U. would be made more secure by state sponsorship. There would also be some supervision by state education agencies, which might be viewed favorably by some and unfavorably by others. In general, though, the feeling among members of the Metro U. community was that through state sponsorship, the prestige and status of the institution would be enhanced and the overall effect of such a change would be a beneficial one. Therefore it is not surprising that our respondents ranked this change fairly high on the Osgood Scale with a mean of 5.48.

Among the questions relating to university policy which brought the most interesting and perhaps somewhat puzzling results was the one concerning admission of qualified Negroes to Metro University. (Since completion of the study, Metro U. admitted Negro students completely without incident.) The dimensions of honest and fair, both on the evaluative scale, received by far the highest responses. On the other hand, the activity scales active-passive and slow-fast received far more neutral responses, as did the potency scales of rough-smooth, weak-strong, and soft-hard. Therefore the data would indicate that our respondents felt that while it was right to admit qualified Negroes, they were less sure about how they would act if and when such students were admitted. The puzzling part about this question was the fact that the Pro-ITV professors were found to have a less favorable attitude toward this item than their Anti-ITV colleagues who, it would have been predicted, would show a lower score because of their greater resistance to change in general.

Much has been written in recent years in popular as well as professional journals about the effects of the ever increasing number of prospective students knocking on the doors of already overcrowded universities. Whether the problem is acute across the nation, or for the moment affects only the more popular institutions, seems to be a debatable question but one that is not really germane to this study. Metro U. was in fact facing an immediate and substantial increase in the number of applicants for admission. Therefore, our Pretest Interview question concerning upgrading of entrance requirements as a possible solution for controlling the effects of the student population increase, was far from "academic". The majority of our respondents favored higher entrance requirements. When asked to give the reasons for their position, most felt that the University should "pick those who are able" and "keep up a standard of quality education". Those who were against upgrading indicated most frequently that this was an "undemocratic" way to control enrolment. In passing we may note again, that not one response even from the Pro-ITV group suggested that instructional television might alleviate the increasing classroom and teacher shortage. Hence, we will need to come back to this question at a later point in our report.

In connection with this question of upgrading entrance requirements, it is important to point out that the faculty as a whole in the original questionnaire favored such upgrading even when it was not presented as a solution to an increase of applications. A positive response to this item was particularly pronounced on the evaluative dimensions, showing a mean of 5.48 for that scale. There were six respondents who - in the interviews - expressed the opinion that upgrading should be carried on regardless of enrolment demands.

Rounding out our picture of faculty attitudes toward university policy questions, we find that the faculty by a large margin favored larger salary increases with fewer additional benefits over more fringe benefits with smaller salary increases. This might again be an expression of confidence in their ability to manage their own affairs.

Night students, a major portion of the total student body at Metro University, were evaluated relatively highly by the faculty with a mean of 5.49 on the evaluative scales. Similarly, emphasis on research at the University received the faculty's endorsement with an evaluative mean of 5.39.

On the other hand, extracurricular activities were lower on the scale. The concept Frontier Fiesta, an annual student activities event since curtailed, was rated only slightly above the theoretically neutral point, and athletic scholarships, with an evaluative scale mean of 3.99, were seen just slightly below neutral.

The erring colleague

We end our discussion of general faculty attitudes by presenting the responses to one of the most provocative questions of our studies, which in a way reflects our respondents' attitudes in several areas discussed in the earlier parts of this chapter, e.g. attitudes toward profession, attitudes toward university policy, etc. Question 19 of the Pretest Interview read: If you were the president of a university and Charles Van Doren applied for a position as a faculty member, would you hire him? The reader may recall that Charles Van Doren, a professor at a large Eastern university, first astounded the nation by his seemingly incredible ability to answer extremely erudite questions on a series of television quiz programs, and then equally shocked the nation by admitting that he had received the answers to the questions in advance. He was relieved of his teaching position, and a lively discussion as to whether he should or should not have been fired ensued throughout the academic community. In general, 43 of our respondents favored hiring Charles Van Doren, while 51 were against it, leaving 25 without a crystallized opinion. About an equal number of reasons were given in favor of and against employing him. Among the largest number of reasons given for hiring him were that one should take advantage of the fact that he was a good instructor (48); Van Doren corrected his mistake, and should be given another chance (33). Surprisingly enough, 17 felt that everyone would have done the same thing, and 16 saw him as a victim of circumstances, and saw no moral issue involved since it was done off-campus. On the other hand, reasons given against hiring the key figure in the quiz scandal saw him as dishonest, immoral, a liar, who disqualified himself as a college professor (40); he had displayed an unprofessional attitude, was unethical and there can be no excuse for his action (18). Fifteen feared his hiring would be bad public relations and would harm the university's reputation, while 14 pointed to the fact that he would lose the respect and trust of the students, and set a bad example for them.

There appears to be some indication from these data that the professor views his colleague who errs ethically in the same harsh manner that is characteristic of other groups, such as the medical and legal professions. But on the other hand, he appears to be torn by the fact that Charles Van Doren was also an excellent instructor who, aside from his transgression, would make a most desirable addition to any teaching staff. Therefore, some of our respondents tried to rationalize hiring him in spite of his infraction.

# Chapter V.

# SPECIFIC ATTITUDES OF METRO'S FACULTY TOWARD INSTRUCTIONAL TELEVISION

In the preceding chapter, we used our data to present a kind of general overview of the attitudes and value structure of the Metro University faculty. We did so by looking at their responses to a number of items which in part make up the University's social and intellectual climate. We are now ready to consider specifically the focal point of our study, faculty attitudes toward Instructional Television (ITV). In the first part of the present chapter, we will present our data and discussion of the nature and extent of the beliefs and attitudes held by a university faculty toward ITV and the prospect of utilizing it as a teaching method. In the latter part of the chapter, we will attempt to restore the total "Gestalt" of our study by presenting our findings about the apparent interrelatedness of these ITV attitudes with the attitude clusters described in the preceding chapter.

## Degree of faculty resistance to ITV

Knowing no more about university professors than we have presented, the reader could undoubtedly intuitively predict their attitude toward ITV. The teacher's general reluctance to desert tried and true teaching methods, and his firm belief that only through face-to-face contact can the student be properly motivated, predict his reluctance to accept ITV as a vehicle for his teaching. Perhaps it should now not surprise us too much under these circumstances that virtually every educational institution which has attempted to use ITV in its curricula has encountered massive hostility on the part of its faculty, and not infrequently, its administration. As pointed out in the introduction, one of the purposes of this research case history was to endeavor to collect empirical data that would more clearly pinpoint the extent and nature of this resistance.

The reader will recall that when we presented our respondents' ratings of teaching methods from the original questionnaire (See Table 3, p. 82), television lectures were rated 13th of 14 items, with only teaching machines ranking lower. Students, it will be recalled, ranked television lectures slightly higher, i.e. in the 11th spot. This fact may be a significant indication that students would be far less hostile toward ITV if their attitudes were not to a considerable extent influenced by those of their mentors. McKeachie (1962) points out that: "....one of the most interesting outcomes of the studies of student attitudes toward television instruction is that they tend to reflect those of the proctors in the viewing rooms." (p. 351) Undoubtedly this is not the whole story; there are indications of other factors which are responsible for student attitudes, apart from those imparted consciously or unconsciously by their teachers. A study by Evans, Wieland & Moore (1961) concluded that:

> "Negative attitudes toward television instruction may be less the result of experience in taking telecourses than of such factors as poor course performance. In other words, television as a medium of instruction may become an available whipping post because of its novelty or latent hostile attitudes arising from other factors in the college course situation."

In any case, television lectures rank low among preferred teaching as well as learning methods.

Examining now the data from the Osgood Semantic Differential, we can plot the direction of faculty resistance in addition to its extent. The reader will recall that the original questionnaire contained five ITV concepts, which are shown below together with the mean of the responses on the evaluative scales: (See also Appendix 8.)

| Item | Overall Mean (Evaluative Scale) |
|---|---|
| 1. "Television Instruction in Introductory Courses" | 4.02 |
| 2. "Straight Television Instruction for Large Classes" | 3.48 |
| 3. "Television Instruction Supplemented by Small Discussion Sections for Large Classes" | 4.73 |
| 4. "Television Instruction in Advanced Courses" | 3.57 |
| 5. "Myself Conducting a Television Course" | 4.42 |

First of all, even a cursory examination of the data reveals that these concepts were generally reacted to unfavorably on evaluative scales when compared to other teaching concepts (see Table 1, p. 73 ). In fact, only three of the five television concepts elicited evaluative scale means of greater than the theoretical neutral point of 4.00. Television supplemented by small discussion sections for large classes elicited the highest evaluation of the ITV responses. Attitudes toward this item may well have been influenced by the then prevailing pattern of telecourses at Metro U., which in fact utilized ITV for some of the introductory courses (e.g. biology, psychology, political science, trigonometry), with two television lectures per week and small discussion sections once a week. We may see here an indication, however slight, that involvement even in an indirect manner may alter attitudes. We will explore this in greater depth in a subsequent chapter on attitude change. Similarly the second highest evaluative scale mean was obtained when the concept of "Television Course" was combined with the concept of "Myself". As was pointed out earlier, the "Myself" component of this item was likely responsible for raising it above the neutral point. Although basically opposed to ITV, the professor feels that he would be capable of conducting a television course, and as a matter of fact, in so doing the value of television as an instructional device is improved. By projecting himself into a television teaching situation, his opinion of the medium in this context rises significantly.

## The nature of faculty resistance

Now that we have presented the extent of opposition to ITV among the faculty of Metro U., let us turn to the more subjective responses to the open-end questions of the Pro-ITV and Anti-ITV groups. These responses were obtained by again using the quasi-role-playing device (Evans, 1952) described earlier. The reader will recall that this technique instructs the respondent to imagine himself first opposed to, and then in favor of, a particular item, in this case ITV. Actually this item appeared in both the Pre- and Posttest Interviews, but the responses will be discussed in this chapter without regard to the differences in frequency of occurrence in the two sets of data. (These frequency differences will be analyzed in Chapter VII.)

The strongest reason for opposing ITV, according to our respondents, centers around the lack of personal contact with the student. This is in line with the importance of the "Myself" component as expressed in the attitudes toward teaching methods in general. One might favor ITV because it reaches more students, but what about distractions, the lack of intellectual atmosphere in the student's home, and the lack of proper motivation? Would these not interfere with the acquisition of knowledge via television, they asked. A professor might well favor TV lectures because this would reduce his teaching load and leave more time for research, but he well might oppose it because it is more difficult to teach on TV, and some felt that there is always the danger that without feedback from the students, controversial viewpoints expressed by the teacher may be misinterpreted. A teacher may find TV acceptable for straight lecture presentations, particularly when he considers the advantage of being able to reuse good lectures and thereby present them to an even larger number of students, but for the teaching of laboratory courses he would find it considerably less advantageous. While some of our respondents admitted that ITV is economical, effective and efficient (from the University's standpoint), they felt that an instructor might be justified in fearing it as an innovation, which may even lead to widespread unemployment of classroom teachers.

As the interviewer moved from the role-playing device to the question of how the respondent actually felt, and reasons for his belief, the range of answers was staggering. We shall present here a composite picture of these responses, again without particular concern about frequency counts or differences between Pre- and Posttest Interviews. (A table of these response categories and their frequency counts appears in Appendixes 2 and 3.)

Television in General: There was a small minority of our respondents who expressed unqualified favorable opinions about ITV. While some merely considered it boring, others opposed it strongly, and some stated flatly that if it should catch on they would quit teaching and go into research. In the middle were those who saw the medium as being useful for some subjects, highly advantageous if used in suitable places, with certain individuals, under certain circumstances. They saw a need for further experimentation, some indication that they are open-minded and willing to try it out. Few said that they were in favor of anything new and expansive, and willing to try out new ways.

ITV as a Replacement of Classroom Lecture: Again in this category, acceptance if any was tempered by many qualifications. Cautiously our respondents might admit that there may be a student body different from Metro U.'s, one with more initiative to dig out information, which might benefit and learn from ITV. They hastened to point out that not all courses lend themselves to TV; as a matter of fact, the areas in which it can be used were thought to be very limited. ("You couldn't teach an entire course in political science on TV.") Therefore it was not seen as a substitute for classroom lecture. Some granted that there may be some advantage in using TV as a supplement, but felt that there must be periods where teacher and student meet face to face, thrash out pros and cons, and in this way TV with recitation might be a good combination. In this way TV could become a good study aid.

Ideal Academic Level for TV Instruction: None of our respondents suggested ITV for use in graduate instruction. There was some disagreement as to whether it was good in basic courses, particularly at the freshman introductory level. Some felt it would be useful here, others thought it was bad for introductory courses and viewed with disfavor any television instruction for first year students. Some felt that ITV might be useful for showing recent advances in science to the general public, to keep the community informed, and as entertainment. They envisioned ITV as a valuable tool for adult education, such as providing home study courses in foreign languages.

ITV: What Methods for What Subjects? Here the range of responses was again very great. Some felt ITV might be used in straight lecture courses where purely factual material was presented, while a number of others saw the possibility of presenting certain types of demonstrations, particularly in the natural sciences. But there was a strong feeling that while TV instruction might be helpful in some courses, it was not yet applicable to the respondent's particular area. Statements along this line included: "Art courses cannot be taught by TV until the color is improved." "One cannot teach history by this method." "Perhaps it could be used for music appreciation, but not for teaching theory and composition." "There would be little application of TV for engineering work, and it would not do for vocational shop teaching."

Size of Class: Responses in this category, though few in overall number, were fairly positive. For large classes, some respondents actually admitted, TV may be better than large classroom lectures; they could see it as overcoming the obstacles often faced in large lecture halls. If the alternative is limiting the number of students, then maybe TV teaching is preferable. But they felt it should be used only for large classes, in certain courses; a good teacher in a small class was considered as ideal.

Quality of Course: The majority of respondents expressed these feelings: TV teaching is not really an academic position. Its use may well lead to mass mediocrity. If it were any good, other larger universities would have taken it up. It is doubtful that a truly great school would use it. Instruction on TV cannot be compared to classroom instruction, it lowers academic standards, commercializes education and weakens it. There were a few who felt that TV will upgrade educational programs. Some were aware that TV lectures can be superior to classroom instruction, and that they are being used in some other institutions.

Students' Attitudes: Some of the interviewees were sure that students disliked taking TV courses. They reported students feeling that they cannot get questions answered and that they resented the barriers between themselves and the faculty resulting from TV lectures. Many negative effects on learning resulting from TV were among the reasons for disliking TV. Respondents felt that watching TV at home, with all of the distractions, the student relaxes too much and does not take learning seriously. If the student fails, they pointed out, the instructor does not know why. Is it because the student did not watch and study attentively enough, or was the presentation inadequate? Then, too, it is difficult to audit a student's verbal performances in such subjects as foreign languages. Four of our respondents actually admitted that they thought very few students fail TV courses, indicating that average grades in TV courses are higher than, or at least equal to, those resulting from classroom teaching.

Effects on the Teacher and his Profession: Some of our interviewees felt that TV, with its ability to reach a large number of students - some of whom might not be able to come to the University - might meet the "Communist challenge" to our technology, relieving the teacher shortage at least in part and meeting the needs of future increased enrolment. Some felt that while a TV system was expensive, there could be large savings in the future by reducing costs per student and making better use of available facilities. On the other hand, some saw TV lectures requiring a lot of preparation, making it difficult if not impossible for the professor to do justice to other courses if he were teaching a TV class. There would be a need for constant revisions of lectures, involving too much administrative work. Some felt that through TV teaching, time and energy could be conserved for both teacher and learner. If students were unable to understand a particular lesson, it could easily be repeated.

TV teaching and classroom teaching were seen as two completely different operations. The instructors felt that limitations in methods are accentuated on TV, with much emphasis being put on the importance of the personality of the lecturer, few possessing the personality required for TV. (I wouldn't be a good TV instructor.") ("Probably fine as long as I'm not involved.") Certainly, they felt, personal experience is the main factor. TV requires instructors who are adequately trained in this method and who have sufficient experience. As far as they were concerned, the good classroom teacher - the one who is enthusiastic and stimulating - should be doing TV teaching. The school should use the best lecturers available for TV courses.

Student-Instructor Contact: As we have already seen in the responses to the Evans quasi-role-playing questions, it is in this category where our respondents were most critical of TV as a teaching device. In none of the other areas did the professors speak so much with one voice. Here is a composite summary of what they said: "Interaction is lost; the student cannot express himself, he can't ask questions or express his opinion. Without student contact, I don't want to teach. Professors want to know their students, students need personal contact, because, after all, learning is a spiritual process of student-teacher relationship. It's better to have a poor instructor in the classroom than to have a good one on TV." Then, too, they felt that learning depends on individual personal needs of students who have individual differences, deficiencies and shortcomings, and these could not be dealt with adequately in TV teaching.

By now the reader surely needs no further comments to grasp the strongly negative feelings of the Metro U. faculty toward ITV. Even when we include the moderately positive statements, the negative ones outnumber them two to one. This means that even the group which we empirically labeled Pro-ITV had many reservations about teaching via TV. This is an important fact to keep in mind when we come to the discussions of the Pro- and Anti-ITV groups in the next chapter.

## The interrelatedness of attitudes toward ITV and other variables: A factor analysis

To what extent are the attitudes toward ITV described in the preceding section interrelated with the other variables related to the university climate and which were explored in the research case history? This is a question which reappeared persistently. It also appeared continually in our discussions at nine other universities, reported in Chapter VIII. Many of the respondents in our discussions at the other universities felt that ITV was not typical of innovations in higher education, and that attitudes toward media innovations such as television are unrelated to attitudes toward other innovations in the university as a whole.

This question of interrelatedness is one that cannot be answered easily. As we pointed out earlier, attitudes tend to cluster, and belief systems tend to be characterized by considerable consistency.

However, there is ample evidence of exceptions to this generalization. The consistency of attitude clusters appears to be relative rather than absolute, frequently permitting the existence of some isolated attitudes which are outside of, or even contradictory to, the individual's overall belief system.

One approach to finding an answer to this question is represented by our factor analysis of the 300 Osgood items from the Initial questionnaire.[1]

Factor analysis is a statistical technique that attempts to ferret out from a large group of responses those that are interrelated or overlapping and bring to the surface underlying determinants. Factor analysis might be compared to the appraisal of a completely new product by looking only at its contents.

For instance, a new exotic food item appears on the market. Although it may be packaged in such a manner as to be tactually and visually obscure, the predominant contents listed on the label would give some indication of the product. You may be sure that it contains other random items which are, however, negligible to the composition of the overall product. Furthermore, the label might list items that the product does not contain, e.g., "salt-free" for dietary purposes. From the listed contents one must "intuit" to some extent the characteristics of the product. In factor analysis, one must likewise "intuit" from the variables which appear and their particular loadings. Some variables, therefore, are as important for their negative loading in a factor, just as the excluded contents of our hypothetical food were important in describing the overall project.

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[1] This analysis was completed at the Survey Research Center, University of California at Berkeley.

Procedure: As the reader may recall, the procedure was described in a brief manner earlier in the present report. In the interest of fuller clarification, a more detailed discussion follows.

It was elected to secure rotations by quartimax method, which attempts to account for variables in as few factors as possible. Factor analytic programs for 300 variables were not available; so, using a unique method developed by Samuel Pinneau, who served as the statistical coordinator for the present study, 4 stratified samples of 75 variables each were used. There were 3 groups for each of the 30 concepts, based on the Evaluative, Potency, and Activity dimensions - or a total of 90 groupings. The scales of the rational categories were randomly assigned to one of the two new groupings, which yielded 2 comparable groups in terms of their representation of each concept and of the Osgood dimensions. Because "round-off" errors accumulate at such a rapid rate when more than a hundred variables are analyzed by the Centroid Factor Analytic Program, each of these groups of 150 scales was broken down into two 75 item groups by taking the odd numbered items for one group and the even numbered items for the other.

The four separate analyses were run through correlational routines and also the Centroid Factor Analytic Program. The factor loadings were then rotated. Twenty factors were extracted from each study of 75 items. One would usually extract a smaller number using some criterion for stopping extractions. Admittedly, many of the 20 factors may be meaningless. A different consideration is encountered, however, when one uses stratified sampling of variables and combines the factors obtained from 4 different samples of variables. A given factor which meets a restrictive criterion in one set of items may not reach the criterion in others. Still the factor could be meaningful and represented in the other group to a measurable extent. Indeed, a factor which does not meet such arbitrary criteria, if present in two or three of the item groupings, could hardly be considered to surface by chance and should be regarded as meaningful.

Thus the criterion employed in the present study regards factors as significant if they appear in both of the analyses. But by continuing the analysis beyond the usual bounds, i.e., to 20 factors, it seems unlikely that a meaningful factor in any one of the analyses would be left out if present to a measurable extent in one of the four matrices.

Only the factor analytic data based on ITV-related items will be presented in the present report, and of these only the first 9 factors within each of the 4 studies. The tables also consider just the items which correlate with hypothetical dimensions (the factor content) to the extent of .25 or greater. The relatively low value was chosen to prevent exclusion of any variables which might be at least theoretically significant to the nature of the hypothetical dimension.

Results and discussion: In the following results and discussion, the reader will note that the authors, *a priori*, placed "labels" on the various factors which have emerged. It is hoped that the reader will recognize (as is always the case in dealing with results of factor analytic studies) that such "labels" and broadly related interpretations of factors are basically subjective processes. It is therefore hoped that the reader will not take the authors' discussion too literally and, in fact, will feel free to reinterpret these factors from still different frames of reference.

One may conceive of each of the resulting factors as relating to one of two patterns with respect to the meaning of ITV to the respondents in the present investigation. These two patterns are: 1) "Pure ITV", or factors which show intra-related concepts within the ITV framework, and 2) "ITV with non-ITV", or factors relating ITV concepts to the individual's pre-established attitudes or cognitive structures concerned with the general university climate.

Ten factors which reflected the patterns referred to above are detailed in Table 5. As can be gleaned from this table, three factors appeared to show intra-related ITV attitudes or concepts. One of these "Pure ITV" factors that might be designated as a "Diverse-ITV-Evaluative-Factor" appeared in all but the fourth study. A second factor that might be designated as a "Diverse-ITV-Potency-Activity-Factor" appeared in the second study. The third "Pure ITV" factor appeared in the fourth study and may be designated "Diverse-ITV-Potency-Factor".

## Table 5

## Factor Analysis

Diverse ITV Evaluative Factor

(Study 1 / Factor 2)

| Item | Scale | Loading |
|---|---|---|
| 1. Television Instruction in Introductory Course | Fair-Unfair | .888 |
| 2. Television Instruction in Introductory Course | Honest-Dishonest | .854 |
| 3. Television Instruction in Introductory Course | Good-Bad | .763 |
| 4. Television with Discussion Groups | Fair-Unfair | .567 |
| 5. Straight Television Instruction for Large Class | Weak-Strong | .565 |
| 6. Television in Advanced Courses | Fair-Unfair | .406 |
| 7.5 Television with Discussion Groups | Fast-Slow | .398 |
| 7.5 Television in Advanced Courses | Fast-Slow | .398 |
| 9. Myself Conducting Television Course | Worthless-Valuable | .385 |
| 10. Straight Television Instruction for Large Class | Passive-Active | .365 |
| 11. Myself Conducting Television Course | Fair-Unfair | .348 |
| 12. Correspondence Courses | Honest-Dishonest | .337 |
| 13. More Fringe Benefits | Honest-Dishonest | .328 |
| 14. Myself Conducting Television Course | Good-Bad | .313 |
| (Study 2 / Factor 2) | | |
| 1. Television in Advanced Courses | Good-Bad | .824 |
| 2. Television in Advanced Courses | Worthless-Valuable | .822 |
| 3. Television in Advanced Courses | Weak-Strong | .753 |
| 4. Straight Television Instruction for Large Class | Worthless-Valuable | .390 |
| 5. Straight Television Instruction for Large Class | Fair-Unfair | .303 |
| 6. Myself Conducting Television Course | Rough-Smooth | .282 |
| 7. Straight Television Instruction for Large Class | Rough-Smooth | .260 |
| (Study 3 / Factor 2) | | |
| 1. Television with Discussion Groups | Worthless-Valuable | .832 |
| 2. Television Instruction in Introductory Courses | Worthless-Valuable | .825 |
| 3. Television with Discussion Groups | Good-Bad | .810 |

### Diverse ITV Evaluative Factor (Cont.)

(Study 3 / Factor 2)

| Item | | Scale | Loading |
|---|---|---|---|
| 4. | Television Instruction in Introductory Course | Weak-Strong | .712 |
| 5. | Television with Discussion Groups | Unpleasant-Pleasant | .711 |
| 6. | Television Instruction in Introductory Course | Unpleasant-Pleasant | .703 |
| 7. | Straight Television Instruction for Large Class | Unpleasant-Pleasant | .611 |
| 8. | Straight Television Instruction for Large Class | Honest-Dishonest | .496 |
| 9. | Television in Advanced Courses | Unpleasant-Pleasant | .452 |
| 10. | Television in Advanced Courses | Honest-Dishonest | .416 |
| 11. | Myself Conducting Television Course | Weak-Strong | .357 |
| 12. | Myself Conducting Television Course | Honest-Dishonest | .349 |
| 13. | Correspondence Courses | Passive-Active | .258 |
| 14. | Correspondence Courses | Unpleasant-Pleasant | .251 |
| 15. | Frontier Fiesta | Passive-Active | .250 |

### Teaching Technique Activity-Potency Factor

(Study 1 / Factor 9)

| | | | |
|---|---|---|---|
| 1. | Training in Teaching Methods for Professors | Rough-Smooth | .650 |
| 2. | Training in Teaching Methods for Professors | Hard-Soft | -.546 |
| 3. | Teaching Machines | Hard-Soft | -.419 |
| 4. | Additional Tuition Increase | Fast-Slow | -.382 |
| 5. | Television with Discussion Groups | Rough-Smooth | .372 |
| 6.5 | Honors Courses of Text and Exam | Fast-Slow | -.312 |
| 6.5 | Answering Questions in Large Class | Rough-Smooth | .312 |

### Diverse ITV Potency-Activity Factor

(Study 2 / Factor 7)

| | | | |
|---|---|---|---|
| 1. | Television with Discussion Groups | Weak-Strong | .645 |
| 2. | Straight Television Instruction for Large Class | Worthless-Valuable | .608 |
| 3. | Straight Television Instruction for Large Class | Fair-Unfair | .575 |
| 4. | Television with Discussion Groups | Honest-Dishonest | .558 |
| 5. | Television Instruction in Introductory Course | Passive-Active | .373 |
| 6. | Television Instruction in Introductory Course | Rough-Smooth | .318 |

## Evaluative Didactic Instruction Factor

(Study 2 / Factor 9)

| Item | | Scale | Loading |
|---|---|---|---|
| 1. | Straight Lecture Method | Worthless-Valuable | .819 |
| 2. | Straight Lecture Method | Fair-Unfair | .756 |
| 3. | Straight Lecture Method | Unpleasant-Pleasant | .492 |
| 4. | Straight Television Instruction for Large Class | Worthless-Valuable | .304 |
| 5. | Straight Television Instruction for Large Class | Fair-Unfair | .280 |

## Calculating Realistic Potency Factor

(Study 3 / Factor 4)

| | | | |
|---|---|---|---|
| 1. | Emphasis on Research | Hard-Soft | .672 |
| 2. | Myself Conducting Television Course | Hard-Soft | .640 |
| 3. | Myself Conducting Large Class | Hard-Soft | .618 |
| 4. | Myself Publishing Research | Hard-Soft | .590 |
| 5. | Higher Entrance Requirements | Hard-Soft | .553 |
| 6. | Frontier Fiesta | Hard-Soft | .466 |
| 7. | Honors Courses of Text and Exam | Rough-Smooth | -.449 |
| 8. | Myself Conducting Television Course | Honest-Dishonest | .391 |
| 9. | Myself Conducting an Introductory Course | Fast-Slow | .340 |
| 10. | Admitting Qualified Negroes | Rough-Smooth | -.314 |
| 11. | Night Students | Fair-Unfair | .304 |
| 12. | Becoming a State University | Rough-Smooth | -.268 |
| 13. | Larger Salary Increases | Fast-Slow | .255 |
| 14. | Myself Conducting Advanced Course | Honest-Dishonest | .235 |

## Self-Evaluative Factor

(Study 3 / Factor 8)

| | | | |
|---|---|---|---|
| 1. | Myself Conducting Large Class | Honest-Dishonest | .639 |
| 2. | Myself Conducting Advanced Course | Honest-Dishonest | .582 |
| 3. | Training in Methods for Prospective Professors | Honest-Dishonest | .387 |
| 4. | Emphasis of Research | Honest-Dishonest | .347 |
| 5. | Myself Conducting Television Course | Honest-Dishonest | .318 |

## Diverse ITV Potency Factor

(Study 4 / Factor 4)

| | | | |
|---|---|---|---|
| 1. | Television Instruction in Introductory Course | Hard-Soft | .761 |
| 2. | Straight Television Instruction for Large Class | Hard-Soft | .754 |
| 3. | Television in Advanced Courses | Hard-Soft | .651 |
| 4. | Television with Discussion Groups | Hard-Soft | .568 |
| 5. | Training in Methods for Prospective Professors | Hard-Soft | .363 |
| 6. | Television in Advanced Courses | Passive-Active | .253 |

The "Diverse-ITV-Evaluative-Factor" showed the intra-relationship of evaluative attitudes of ITV with its application to 1) introductory courses; 2) discussion groups; 3) advanced courses; 4) large courses; 5) self-evaluations as ITV Professors. Also appearing in this factor was an apparent relationship of ITV to correspondence courses. It might be noted here that the extreme Pro- and Anti-ITV groups also responded to the concept of Correspondence Courses in a manner similar to their responses to ITV concepts, i.e., the Pro-ITV group gave a significantly higher evaluation to Correspondence Courses than did the Anti-ITV group. (See discussion of Pro- versus Anti-ITV group data.) Although the Correspondence Courses item factor loading never exceeded .337, the fact that it occurred 3 times lent some validity to the statement of a relationship of faculty attitudes toward such courses and their attitudes toward ITV. Of the 36 items loading on this factor in 3 different studies, 25 were from the Osgood Evaluative Scales.

Another factor which illuminated some intra-relatedness of ITV items was the "Diverse-ITV-Potency-Activity-Factor". This factor appeared as the 7th factor in Study 2. The most heavily loaded item in this factor was "TV with discussion groups - Strong" (.645). Half of the items appearing in this factor were from either Osgood Activity or Potency Scales. From these data concerning this factor one might hypothesize that ITV attitudes showed an activity-potency intra-relationship among the concepts of ITV applied to 1) Discussion groups, 2) Large classes, and 3) Introductory courses. In general one might say that this factor reflected an Activity-Potency facet concerning the nature of many of the items included in the "Diverse-ITV-Evaluative-Factor".

The final factor to be discussed here concerning intra-relationships of concepts within the ITV framework is the "Diverse-ITV-Potency-Factor" which appeared as the fourth factor of Study 4. All but one of the 6 items loading on this factor were from the Osgood Potency Scale, "hard-soft". The single exception was the least heavily loaded item, "ITV in Advanced Courses - Active". Again intra-relationships were found between ITV with 1) Discussion groups, 2) TV for large classes, 3) TV for introductory courses, 4) TV with discussion groups, and 5) TV in advanced courses. A relationship of ITV to "Training in teaching methods for prospective professors" also appeared in this factor.

Conceptualizations of and attitudes toward aspects of ITV appeared related to non-ITV concepts and attitudes in 4 factors. The first of these factors designated as a "Didactic-Instruction-Evaluative-Factor" appeared as the ninth factor in Study 2. The relationship between "Straight lecture method" and "Straight TV for large classes" might reflect less concern with ITV as such, but rather indicates a limited didactic approach to teaching in general. All 5 items loading on this factor were from Osgood Evaluative Scales.

In the factor "Teaching Technique-Activity-Potency-Factor", relationships of ITV to other teaching methods were noted. The only ITV item which appeared within this factor was "TV with discussion groups". It appears to be related to the concepts "Training in teaching methods for professors", "Teaching machines", "Answering questions in large classes", "Honors courses", and "Additional tuition increase". With the exception of the item concerning "Additional tuition", one might conceive of this factor as indicating an integration of ITV conceptualizations into an existing cognitive structure. Such a cognitive structure might reflect a preoccupation with a variety of teaching methods.

The third factor related to ITV with non-ITV attitudes and conceptualizations was found in the third study and was designated a "Self-Evaluative-Factor". Among the items appearing in this factor (which all loaded on the "honest-dishonest" Evaluative Scale) were 3 "myself" items including "Myself conducting a TV course". Apparently related to these "myself" evaluations were "Training in teaching methods for prospective professors" and "Emphasis on research". Again we have here an instance of ITV being integrated into an already existing focus of concern. In this instance, the cognitive structure might be regarded as a concern with the professor's self-image and "doing the right thing" in terms of what is expected of him in the university climate.

All of the items which appeared in the above "Self-Evaluative-Factor" were found to appear also in the third factor which was described as a "Calculating Realistic-Potency-Factor". This factor seems to reflect a relationship of its included items with the items appearing loaded on the "Self-Evaluative-Factor". Whereas, in the "Self-Evaluative-Factor" the professor seems to display a subjective concern with himself and the appropriateness of his behavior, here he is concerned with his competence to objectively assess concrete realities. Among the wide range of interrelated concepts appearing in this factor were "Emphasis on research"; "Myself conducting TV introductory and advanced courses"; "Higher entrance requirements"; "Myself doing publishable research"; and "...Becoming a State University". Of 14 items which were loaded on this factor, 9 were from the Osgood Potency Scales. Here we have reflected a strong tendency to see things as they "really" are with a skeptical, "no nonsense" approach.

In briefly re-examining the results of the factor analysis, it appears that some very significant aspects of professors' attitudes toward ITV have emerged. First of all, it can be pointed out that professors, although they are perceived by advocates of ITV as being preoccupied with a nemesis-like conception of the medium, very often evidenced attitudes toward ITV that have, in fact, resulted from an incorporation of ITV concepts into an already existing structure of attitudes and cognitions. Such pre-established attitude and cognitive structures were found, in the case of these professors, to be concerned with the overall university teaching situation and the professor's personal, general philosophy of life. On the other hand, there is indeed a basis for suggesting that the professors may, in some instances, isolate and "see" ITV in a context specific to the medium. In such a specific ITV context the professors' attitudes and conceptualizations center or converge upon ITV, _per se_.

This factor analysis, in addition to being a rather interesting examination of cognitive structures and feelings concerning ITV, also may be seen as an exercise in terms of what some writers have referred to as "isolation and differentiation" of attitudes (Rokeach, 1960). Certainly we find here a clear instance of some individuals displaying a rather isolated attitude (relating specifically to ITV) and other individuals expressing a high interrelationship among attitudes (ITV as related to the individual and his academic environment).

In the same vein as our earlier discussion of this problem, Rokeach (1960, p. 36) speaks of such an isolated attitude as actually expressing "the existence of logically contradictory beliefs within the belief system". He has proposed as an example the frequently denoted attitude of "believing in freedom for all, but also believing that certain groups should be restricted". A parallel to this type of isolation was seen in this study as typified by such statements from individuals as the following: "ITV is a fine instructional medium, but not for my subject area"; and "ITV is the best means to reduce expenses in time, money, and facilities, but I would get out of teaching if I had to use it". The factor analytic data point to the existence of a similar "isolation" factor in reacting to ITV.

These data may be thought of as presenting an interesting example of a cognitive model of the organization of attitudes and thus are rather interesting from the standpoint of attitude theory.

# Chapter VI.

# THE PRO- AND ANTI-ITV PROFESSOR: AN ANALYSIS OF PROTOTYPES

The report of our study has, thus far, focused in the main on the nature and extent of attitudes directly or indirectly related to TV as an instructional device in college teaching. We have used our data to present to the reader a composite picture of these attitude clusters without structuring them into a complete framework which could be identified as making up the personality of the Pro or Anti professor. In this chapter we will present some data and interpretations which will create such personality images. We should like to emphasize once again that the professors which we are about to create are "statistical men", prototypes, to which we will attribute extreme attitudes. It is highly doubtful that any of our respondents completely belonged to either of the groups even in a statistical sense, in other words displaying all of the characteristics of the prototype. In fact, most of the faculty members involved in the study fell in a group central to the extreme polarities which will be described. For this reason an individual faculty member may well display characteristics observed in both extreme groups, or none from either of them.

It will be recalled from our presentation of the methods and procedures that the two antipodal groups were established on the basis of the analyses of responses to the original questionnaire. The specific criterion for selecting the extremely favorable and extremely unfavorable group was the concept Television Instruction in Large Enrolment Introductory Courses. This item appeared to evoke the most unqualified reaction to ITV, producing sufficiently large samples of responses in terms of 7 and 6 point (favorable) and 1 and 2 point (unfavorable) on the good-bad, weak-strong, and valuable-worthless scales. This then was the basis on which the 55 Pro-ITV and 65 Anti-ITV subjects were selected. As we will see later, the validity of this selection criterion was confirmed in terms of other responses to related questions, particularly the open-end responses in the Pre-and Posttest Interviews.

One more word about the use of extreme groups for exploring attitudes. We urge the reader to look at our utilization of such groups as a mere social psychological device. The temptation is great for both investigator and reader to over-interpret such data, and to derive both good and bad value judgments concerning the general nature of professors friendly or hostile to a particular item like ITV. The investigators have made every attempt to avoid making such explicit or implicit judgments, and we urge the reader to proceed likewise with caution.

### Academic area and ITV

The modern urban university requires and attracts instructors with a variety of attitudes as well as skills. It can be intuitively predicted that the person teaching a pragmatic course in technology may have attitudes which stand in stark contrast to those of the philosophy professor. Again the values of the physical education instructor undoubtedly are not all shared by the lecturer in English literature. An examination of ITV attitudes in the light of academic disciplines may therefore prove most fruitful. Thus our investigators categorized the Pro- and Anti-ITV groups first according to their departmental discipline. These categories were then collapsed into seven general instructional fields. A statistical test of significance was used[1] to determine whether particular academic areas had greater numbers of respondents belonging to one or the other extreme group. Table 6 shows the general instructional field, the departments it subsumes, the actual frequencies in both Pro and Anti groups and the level of significance.

As can be readily seen from Table 6, the Anti-ITV subjects were most frequently in the more traditionally academic fields, the sciences, humanities, social sciences, and the field of education. Hence hostility to ITV seems to be more intense in the areas which are more central to the traditional core of the university's curricula, the area which is generally identified as "academic". On the other hand, the most Pro-ITV respondents were in fields which are known by their very nature to display less hostility toward innovations, such as engineering-technology, communication arts, and the general area of business administration.

The Pro-ITV respondents were found to be members of 29 different departments; the Anti-ITV respondents were located in 24 different departments. Thus is may be stated that the Pro-ITV sample was representative of a somewhat broader spectrum of academic disciplines

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[1] Significance levels were established by a binomial, non-parametric test of significance as described by Siegel (1956).

Table 6

Membership of Pro- and Anti-ITV Groups

In Seven General Instructional Fields

|  |  | Frequency |  |  |
|---|---|---|---|---|
| Field | Departments | Pro-ITV | Anti-ITV | p |
| Engineering and Technology |  | 12 | 3 | .02 |
| Communication Arts | Music, Art, Radio-TV, Journalism, Architecture, News Service | 12 | 5 | .07 |
| Business | Economics, Finance, Accounting, General Business | 9 | 2 | .03 |
| Social Sciences | Psychology, Political Science, History, Military Science | 4 | 12 | .04 |
| Physical-Biological Sciences | Mathematics, Physics, Chemistry, Biology, Pharmacy, Geology | 5 | 15 | .02 |
| Humanities | Philosophy, English, Foreign Language | 4 | 9 | .13 |
| Education | Elementary Education; Secondary Education; Health, Safety, and Physical Education | 4 | 9 | .13 |

than was the Anti-ITV sample. A careful analysis of the departmental memberships held by the extreme groups indicated that the Pro-ITV group was represented more often by 4 or less members within a department. The incidence of only a single member of a department appearing in the Pro-ITV group was noted 18 times, while it occurred in the Anti-ITV group only 12 times. While the Pro-ITV group was never represented by more than 4 people within any single department, the Anti-ITV group was represented by 5 people in one department, 6 people in 2 departments, and 9 people in still another department. It might therefore be hypothesized from these data that the Pro-ITV professor is more likely to hold his attitude toward ITV as an individual not particularly dependent upon or receiving the support of his colleagues. On the other hand, it might be hypothesized that the Anti-ITV professor's attitudes tend to be nurtured by intra-departmental group support or pressures. However, this interpretation must be tempered by the fact that these data are not necessarily relative to the total number of members in the departments cited.

Obviously, not all disciplines, or all members of departments in any one discipline are reflected in these extreme groups. As a matter of fact, it must be kept in mind that with few exceptions most respondents in all disciplines fell in a "middle" group - neither strongly in favor of nor strongly opposed to ITV.

## The Pro-ITV professor

What sort of person becomes an innovator or an adopter in a given community in which there is considerable hostility toward an innovation? This is one of the main questions raised by social psychologists and sociologists in the investigations reviewed in Chapter II. Obviously there must be some attitudinal characteristics which, if not causally related, are at least coexistent with his more favorable attitude toward certain innovations. The results of our study do project some interesting images of the innovators in at least one such community confronted with a specific innovation. To explore this question in depth, our problem was, of course, to pinpoint in what ways the responses from the Pro-ITV group were different from those of the Anti-ITV's. To find these areas of disagreement, we applied the Chi Square test of statistical significance to the differences in response frequencies. Since this statistical method is commonly used in the behavioral sciences, it should suffice to say that it is a means of determining whether a given distribution of values differs sufficiently from those of another distribution as to be indicative of the operation of non-chance factors. Such significance can be determined at several levels of confidence, i.e. chance levels. Hence, when we show a difference between the two groups at .01 level, it indicates that there is a 1% chance that this was a characteristic of both groups. On the other hand, when we show a significant difference at the .10 level, the chance of this not being a real difference is increased to 10%. Actually we have included in our report only the most significant results and inferences. Because we are dealing with extreme groups of small numbers to begin with, an exposition of the analyses which yields insignificant differences would be of little use.

Table 7 shows the items on which the Pro-ITV group responded significantly higher than the Anti-ITV group, as well as the levels at which these differences were statistically significant.

Surveying the pattern of attitudes significantly more displayed by Pro-ITV's, we can make several generalizations. It is clear that the innovators among our respondents were less conservative, less traditionally oriented, and perhaps in a way less "scholarly" and "academic" in the narrow sense of the word. They tended to feel that the university climate can and should include some non- or extra-curricular activities, such as the "Frontier Fiesta", a student festival, and athletic scholarships, assuring a better athletic program for Metro U.

Furthermore, the Pro-ITV's attitudes toward teaching and student evaluation also show significant differences. He appears to have somewhat less self-assurance. Although he is, of course, willing to teach on TV, the only other significant "Myself" concept is teaching a small class. Method seems more important to him than to his colleagues. Not only is he willing to receive more training, but he is also far more willing to experiment with various instructional methods, such as class demonstrations, field trips, motion pictures, TV viewing, even teaching machines and television lectures. Similarly he reports that he evaluates students along more diverse lines,

Table 7

94 Items in which the Pro-ITV Group Responded

Significantly Higher than the Anti-ITV Group

Initial Questionnaire
Osgood Data

| | Significance Levels | | | |
|---|---|---|---|---|
| Item | .01 | .02 | .05 | .10 |
| Frontier Fiesta | | Pleasant | Honest<br>Valuable | Good |
| Athletic Scholarships | Good<br>Honest<br>Fair<br>Pleasant<br>Valuable | | | |
| More Fringe Benefits with Smaller Salary Increase | Good<br>Pleasant | Smooth<br>Fair | Strong | |
| Emphasis on Research | | | | Strong<br>Valuable |
| Training in Teaching Methods for Professors | | | Valuable | |
| Training in Teaching Methods for Prospective Professors | | | Fair | Active |
| Lecture Method Supplemented by Small Discussion Section for Large Classes | | | | Pleasant |
| Television Instruction in Introductory Courses | All Scales | | | |
| *Straight Television Instruction for Large Classes | 9 Scales of 10 | | | |

* - "Hard-Soft" not significant

Table 7 (Cont.)

| Item | Significance Levels | | | |
|---|---|---|---|---|
| | .01 | .02 | .05 | .10 |
| Correspondence Courses | Fair<br>Strong | Smooth | | Good<br>Active<br>Hard |
| * Television Instruction Supplemented by Small Discussion Section for Large Classes | 8 Scales of 10 | | Smooth | |
| * Television Instruction in Advanced Courses | 8 Scales of 10 | Active | | |
| Teaching Machines | Honest<br>Strong<br>Valuable | Fair | Good | Fast |
| * Myself Conducting a Television Course | 7 Scales of 10 | | | Active<br>Fast |
| Myself Conducting a Small Class | | Strong | | |

Academic and Background Data

| Item | Significance Levels | | | |
|---|---|---|---|---|
| | .01 | .02 | .05 | .10 |
| Teaching Methods Preferred: | | | | |
| Class Demonstration | | | x | |
| Field Trips | | | x | |
| Motion Pictures | x | | | |
| Suppl. TV Viewing | x | | | |
| Teaching Machines | x | | | |
| Television Lectures | x | | | |
| Total number of various teaching methods selected was higher for Pro-TV group. | | | | x |
| Criteria for Evaluating Students: | | | | |
| Attitude | | | | x |
| Objective Tests | | | | x |
| Promptness in Completing Assignments | | | | x |

* - "Hard-Soft" not significant

Table 7 (Cont.)

### Academic and Background Data (Cont.)

| | Significance Levels | | | |
|---|---|---|---|---|
| Item | .01 | .02 | .05 | .10 |
| More Pro-ITV have taught at more institutions. | | x | | |

### Pre-Experimental Interview

| | Significance Levels | | | |
|---|---|---|---|---|
| Item | .01 | .02 | .05 | .10 |
| Liked Questionnaire | | x | | |
| Approved Questionnaire | x | | | |
| Judges Overview Ratings over questions 8-12 (all concerning teaching machines) | Favor | | | |
| Judges Overview Rating over questions 13-16 (Imagine self strongly favoring ITV; Imagine self strongly opposed to ITV; How personally feel about ITV and why) | Favor | | | |
| Hire Van Doren? | | | Yes | |
| Was good instructor. | | | | x |
| Summary of Interview Ratings | Tolerant Sophisticated | | | |

### Post-Experimental Interview

| | Significance Levels | | | |
|---|---|---|---|---|
| Item | .01 | .02 | .05 | .10 |
| Number of miscl. advantages in using VTR to improve teaching. | | | | x |
| Judges Overview Ratings of questions 8 & 9 (Personal Feeling to TV & why) | Favor | | | |

including attitude, objective tests, and promptness in completing assignments as criteria for judging student performance. Again this may be some indication that less intellectual factors play a greater role in the Pro-ITV's view of the total university.

Naturally it should come as no surprise that great differences were found between the Pro- and Anti-ITV groups on the items, "TV instruction in introductory courses", and "Straight television for large classes", and "Television with discussion groups". As can be seen from the table, all differences were found to be in the predicted direction. This provides us with a check on the validity of our criterion for the selection of the two extreme groups. The Pro-ITV apparently felt that the greatest value of TV would be in easing the teacher shortage, again an indication that pragmatic problems are of greater concern to him. He also responded with a significantly greater number of miscellaneous advantages of the video-tape recorder to improve teaching, in line with his concern for method.

Is the innovator less opposed to intrusion into his own life by others? Our data would so indicate. Significantly more Pro-ITV instructors liked and approved the original questionnaire than did their Anti-ITV colleagues. More of the Pro group were judged to be tolerant and sophisticated, less hostile and bland, in the interview situation.

Perhaps one explanation for several of these factors is the fact that the Pro-ITV professor had taught at more institutions. Intuitively we would hypothesize that exposure to a large number of different institutions would broaden the instructor's view of education. He would, of necessity, have had to become more flexible in dealing with a variety of attitudes within different institutions and among differing groups of colleagues. However, it may well be misleading to belabor this fact too long. As we pointed out earlier, there is some danger in assigning causal attributes to statistical relationships. It may be that the Pro-ITV professor, possessing greater flexibility and more willingness to experiment is more prone to present himself to more institutions for employment, while the less flexible, more academically oriented and perhaps somewhat pedantic professor would rather stay put, build his academic position and not look to the other side of the fence, even if there might be greener grass.

Our data would tend to support the limited empirical findings available concerning the innovator or earlier adopter personality. For example, Rogers (1962) pointed out that innovativeness (the degree to which an individual is relatively earlier to adopt an idea than the other members of his social system) is related to a modern (flexible) rather than traditional (rigid) orientation. He goes on to note that observers have found that venturesomeness is almost an obsession with innovators.

To round out the image of the Pro-ITV instructor it is necessary to look at some of the items on which he scored significantly lower than his colleagues. In a way these negatively weighted items may be as characteristic of his personality as those to which he responded positively. The Pro-ITV professor apparently feels less positive about the concept of Night Students. On the whole, these more mature students are already involved in a profession or occupation, and tend to contribute little to the non-academic aspects of the University. In the jargon of the college campus, they are said to have no "school spirit". They are, on the other hand, known for the seriousness with which they approach their education, wanting to get the maximum out of every available hour -- they want to get their tuition money's worth. They may have little patience with an instructor who experiments, feeling that they haven't time for such experimentation, but prefer to get the most straight knowledge in the shortest possible time. They generally couldn't care less about extracurricular activities like "fiestas" or athletics. As we will see, these may be characteristics which impress the Anti-ITV instructor more favorably than his colleague.

### The Anti-ITV professor

As we move now from one end of the spectrum to the other, the data shown in Table 8 provide us with the contrasting image of the Anti-ITV professor. One of the first insights into the structure of the Anti-ITV instructor's attitude, in contrast to the Pro-ITV colleague, is the former's academe-centered disposition. To the Anti-ITV faculty member, the traditional academic values of the university discussed in a preceding chapter are at the center of his value structure. He views with considerable indifference, or even hostility, those items which are peripheral to the university

### Table 8

### 30 Items in which the Anti-ITV Group Responded Significantly Higher than the Pro-ITV Group

Initial Questionnaire
Osgood Data

| Item | Significance Levels | | | |
|---|---|---|---|---|
| | .01 | .02 | .05 | .10 |
| Night Students | | | | x |
| Additional Tuition Increase | | | Unpleas. | |
| Larger Salary Increase with Fewer Additional Fringe Benefits | Pleasant<br>Hard<br>Valuable | | Good<br>Honest | Fair<br>Strong |
| Becoming a State University | Active<br>Fair | | Good<br>Honest<br>Valuable | Strong<br>Pleasant |
| Admitting Qualified Negroes | Active<br>Strong | Fair | Good<br>Smooth | |
| Straight Lecture Method | | Pleasant | | |
| Answering Students Questions in Large Classes | Good | | | |
| Myself Conducting a Lecture Course | Good | | | |
| Myself Conducting a Large Class | | | | Good |

Academic and Background Data

| Item | Significance Levels | | | |
|---|---|---|---|---|
| | .01 | .02 | .05 | .10 |
| Criteria for Evaluating Students'' Spelling | | | | x |

## Pre-Experimental Interview

| Item | Significance Levels .01 | .02 | .05 | .10 |
|---|---|---|---|---|
| Heavier Teaching Load | | | x | |
| Hire Van Doren? | | | Against | |
| He had unprofessional attitude, was unethical, dishonest, immoral | . . . . . | . . . . . | . . . . . . . | . . Closely approached this level |
| Number Miscellaneous Disadvantages to ITV | | x | | |

In responding to the specific questions, "How do you personally feel about television?" and "Why?", the Anti-ITV group gave the following responses significantly more often than did the Pro-ITV group.

| Item | Significance Levels .01 | .02 | .05 | .10 |
|---|---|---|---|---|
| Television Courses Give Bad Results | x | | | |
| Inter-personal Relationships Left Out | | x | | |

In responding to the specific questions, "How do you personally feel about television?" and "Why?", the Pro-ITV group gave the following responses significantly more often than the Anti-ITV group.

| Item | Significance Levels .01 | .02 | .05 | .10 |
|---|---|---|---|---|
| General Statements | | | | |
| "TV Good" | x | | | |
| Aid Teacher Shortage | x | | | |

as he perceives it. There is some indication that he tends to rationalize hostility toward such peripheral items by counterrelating them to his academic station and academe centeredness. Thus we find that in response to our hypothetical question concerning Charles Van Doren, the Anti-ITV professor typically opposed hiring him on the grounds that Van Doren was "unprofessional in his attitude", "unethical", "dishonest", and "immoral".[2]

As indicated earlier, the one overall characteristic which marks the laggard, i.e. the last to adopt an innovation, according to Rogers (1962), is tradition. The laggard's reference point is in the past. Decisions are made in terms of what was done in past generations. Laggards tend to be frankly suspicious of innovations and innovators. The prototype of our Anti-ITV professor fits this model rather well. His greater concern is for the traditional approach to instruction, as indicated by the significantly higher evaluations he gives to such concepts as "Straight lecture method" and "Answering students' questions in large classes". His self-image is one of adequacy, at least within his limited field of academic endeavor, as shown by the significantly higher score on the questions which begin with "Myself conducting...." This may also be seen as further verification of the "professionalistic" disposition of the Anti-ITV professor.

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[2] Although the incidence of any of these responses only approached significance, it is clear that had all the specific Anti-Van Doren responses of this nature been collapsed into a single category, the difference would have become significant.

A further indication in support of an hypothesis questioning the consistency of attitudes toward diverse innovations emerges in response to the concept, "The university becoming a state university". Perception of this change appears to be independent of his perception of the technical innovation. If we accept Rogers' postulate that "Perception (of an innovation) is a function of the situational fields within which the individual operates," we can fit the favorable responses to this concept given by the Anti-ITV instructor into his preeminent concern with the academic aspects of his existence. Perhaps he perceives the new "Metro State University" as possessing more academic prestige, attracting more applicants, thus providing more opportunity for selecting a more qualified student body. He is aware and favorably disposed toward the fact that the state legislature will be loath to allocate money for extracurricular activities or for experimentation with new teaching methods such as Instructional Television. Miles (1964) describes such innovations as non-disturbing, since they can be fitted easily into the existent value structure of the individual.

As would be predicted (Evans, 1952) in the operation of the quasi-role-playing technique of measuring attitudes, the Anti-ITV professor was able to give significantly more miscellaneous disadvantages to ITV. When asked to give reasons why he personally opposed ITV, the instructor in this group pointed significantly more frequently to the fact that television courses give bad results, and that interpersonal relationships are left out. However, while he appears to be more concerned with interpersonal relationships on some items, he tends to use fewer criteria in the evaluation of students. Furthermore, the single criterion which he prefers to use more often than the Pro-ITV professor in evaluating his students is the somewhat pedantic criterion of "Spelling". In part, higher valuation of this criterion may be conditioned by his"psychological field". The Anti-ITV professor's academic field tended to be more central to the traditional university areas, where it may generally be assumed that correct spelling is more highly valued than in the more applied areas such as technology.

Why is the Anti-ITV professor apparently more concerned with "Larger salary increases with fewer fringe benefits"? Again, there are several possible explanations. It may be that attitudes toward this item are related to this group's self-image. To the instructor who has high confidence in his own judgment and who adheres to more traditional values, fringe benefits may appear to be innovations aimed at reducing his role in deciding how to allocate his income. On the other hand, he may simply have selectively responded to the first part of the concept, "larger salary increases". If the latter were the case we might suspect that the Anti-ITV professor receives less salary than his pro-ITV colleague. University policy made it impossible in the present study to obtain professors' individual salaries, so that we were unable to obtain data confirming or denying such an hypothesis. However, more indirect supportive data might be extrapolated from our finding that the Anti-ITV professor carries a heavier teaching load than his Pro-ITV counterpart. Typically in U. S. universities, there is a negative correlation between salary and number of hours taught. Thus professors who have large teaching loads are those whose names appear at the lower part of the payscale. Admittedly this is a questionable extrapolation from our data, but one which supports another generalization, namely that earlier adopters have a more favorable financial position than late adopters.

Briefly recapping our findings, we may picture the Pro-ITV professor as being more adventuresome, flexible and mobile in his thinking and teaching. His concern is not limited to the narrowly defined academic aspects of the university; rather he tends to see the university as a social as well as academic community. As far as the academic aspects of his existence are concerned, he is far more willing to experiment with new methods and techniques than his Anti-ITV colleague. However, when it comes to innovations which affect the social aspects of the university, he may be less supportive of change. In any case, he is interested in a wide range of questions which transcend the traditional boundaries of the university.

At the opposite extreme of the continuum we find the Anti-ITV professor, narrowly focused on questions and events which revolve around the traditional academic framework. The acceptance or rejection of any concept depends, for him, on the way in which it fits into his academically ordered world. He perceives himself as being highly competent in his chosen profession, and thus he spends more time doing what he thinks he does best - teaching by traditional methods. He sees as the greatest threat those forces within his environment which might "dilute" the academic aspects of the university, or alter his role within it.

Of course most of our respondents in all the departments were not clearly either Pro- or Anti-ITV. In other words, most of the population studied favored ITV in some ways and in some ways opposed it, while others perhaps were indifferent toward it. However, as has been found in most American universities, professors as a group are inclined to be opposed to, rather than in favor of, the use of television instruction. Considering the Pro- and Anti-ITV attitudes along a spectrum, it is likely that most of our population which was, of course, at least moderately anti-ITV could not be thought of as possessing many of the qualities which at least statistically appeared to characterize our extreme Anti-ITV group. Likewise, of the professors who were moderately pro-ITV, few would possess many of the qualities which at least statistically appeared to characterize our extreme Pro-ITV group.

This should be made clear, since as we indicated earlier, some faculty members who read a preliminary report of our research case history (Evans et al., 1963) and who themselves were perhaps at least moderately opposed to ITV were moderately defensive, since they rightfully could not apply many of the qualities of our statistical prototype of the Anti-ITV professor to themselves. In fact, one of the most difficult tasks of a psychological investigator in a study utilizing such a select and rarely studied population as college professors, is to communicate the ethics involved in psychological research. For example, in our research case history, individuals and departments were not identified. Also, even though such results may appear to some readers to reflect a bias on the part of the investigators, it is more likely that the reader is "selectively perceiving" an alleged bias in the investigators, which may in fact reflect his need to believe such a "bias" exists. As a case in point, some members of the faculty felt that our inclusion of an item relating to the number of papers a professor published implied that we were somehow emphasizing the importance of publishing as against good teaching, since the Pro-ITV group reported more publications. Others felt that the fact that we were even studying reactions to ITV meant that we were necessarily advocating its use. We hope our use of prototypes of the extreme Anti- and Pro-ITV professors is seen only in terms of the objective perspective that we have tried to maintain throughout the present report. Our only purpose in such a comparison is to explore extreme reactions to one controversial innovation, in the hope that this assists us in generating more hypotheses about the social psychology of innovation in the American university. In fact, even the belief that innovation in general is necessarily good, and resistance to innovation in general is necessarily bad, would be an inappropriate bias for an investigator in this field.

With the aid of the prototypes introduced in the preceding section, we feel that we have indicated some value in introducing a study of psychological dimensions in innovation research in the university. Now we will look at some of the thooretical implications of our findings and, most especially, discuss the need which we see for further research using more refined instruments for the measurement of underlying psychological dimensions. As we have pointed out previously, our research case history was in many ways a pilot project which we hope will provide the basis for further research into factors relating to innovative behavior. We are aware that our instruments, though carefully constructed, in many ways lacked sensitivity for providing the kind of data which would make possible reasonably broad predictions about an individual's or a group's behavior. However, the data have provided us with some fundamental insight into personality dimensions which might provide hypotheses which could become the basis for instruments which would be helpful in understanding and predicting innovative and innovative-resisting behavior among members of university faculties.

## Innovation theory and the ITV prototypes

One of the most promising dimensions which deserves further investigation emerges from the studies within the framework of innovation theory discussed in Chapter II. The reader will recall that we pointed out that most of the extant research in innovation has been carried out by sociologists and cultural anthropologists who tend to seek an explanation for the varying degrees of innovation acceptance behavior in an analysis of the social system and the individual's role within that system. Although valuable information has been gathered in this manner, we feel that a more psychologically directed understanding of the individual within the system provides an added dimension of understanding which could contribute significantly to the predictability of innovation acceptance or rejection behavior. This could be achieved, for example, by probing more deeply into individual frames of reference, values, and attitudes with respect to a particular innovation proposed for a university. It would require two further steps: first, to ferret out from the many personality attributes which show some possible relationship to the degree of individual acceptance of an innovation, those which appear most likely to bear a causal relationship; and second, to design the necessary instruments to provide more refined measurements of such personality traits, which then can be utilized in more extensive, controlled investigations.

### The cosmopolite-localite dimension

An example of the problems which innovation theory encounters by ignoring psychological dimensions will illustrate the possible limitations of sociological approaches which sometimes appear to use simple behavioral descriptions as indicators of psychological processes. Rogers (1962) reports a study by Ryan and Gross in which they found a positive relationship between time of adoption of hybrid seed and the number of trips a farmer made outside the small Iowa farming community to Des Moines. Rogers uses this study to show how such an empirically derived hypothesis tested operationally can be used to support a more general hypothesis which states that innovativeness varies directly with cosmopoliteness. (Leaving one's own environment regularly apparently indicates that one is relatively cosmopolite.) However, such a simple operational measure may not be an adequate one for a general theory. There is nothing inherent in going to Des Moines that changes the farmer's attitude toward hybrid corn. We need to know those factors involved in traveling to Des Moines which shape his attitude. There are several possibilities. On the way to Des Moines he may observe that the fields of corn along the road look better than his own, and note the brand of corn, a hybrid type advertised on the field along the road. He may stop six miles outside the city limits of Des Moines to visit the experimental farm where Henry Wallace developed hybrid corn. His trips to Des Moines may include attendance at the "Farmers' Institute", where experts present many new innovations, but on the other hand, it is quite conceivable that he could make many trips to the city without any modification of his attitudes toward hybrid corn. Conversely, the farmer who rarely travels to Des Moines may actually emerge as an innovator, displaying a high degree of cosmopoliteness. He may listen regularly to the farm programs broadcast by various radio and television stations and he may subscribe to and regularly read the Des Moines Register, a daily paper which prominently features farm news. Thus is can easily be seen that the number of trips to Des Moines would provide at most only a very gross index for the measurement of an individual along a cosmopolite-localite dimension.

Our own study indicated the possibility of taking too seriously similar superficial and possibly spurious relationships. For example, we found a positive relationship between the number of institutions at which the respondent had taught prior to coming to Metro U.

and his favorable attitude toward ITV.[3] But as we pointed out when we reported these data, there are many reasons for such a correlation which need not signal a causal relationship at all.

Careful analysis of our findings, together with the empirical data of the limited number of other studies in this area and the informal data which will be reported in Chapter VIII, have however convinced us that one of the basic premises of innovation research, namely that innovativeness varies directly with cosmopoliteness and inversely with localiteness, does represent a most promising spectrum for further research in the social psychology of innovation in higher education. On the basis of a number of criteria, our data have shown that the professor with an orientation outside the social system, i.e. the University, who thereby receives new ideas from the outside, tends to look upon ITV more favorably than the professor whose orientation is perhaps too narrowly and exclusively focused upon his own academic community.

We would suggest the development of a specific measurement instrument of the psychological aspects of the cosmopolite-localite continuum. However, even without a specific study of this dimension, we decided to include in our report some of the variables derived from our present study which we feel are relevant to the development of a measure of the cosmopolite-localite behavior of the university faculty.

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[3] Miles (1964) similarly speculates that the pedagogically innovative teacher turns out to have worked in several different school systems.

It would appear that a cosmopolite individual must have channels reaching outside his particular social system in order to receive new ideas which frequently and in some systems exclusively come from outside the system itself. This appears to be particularly important in the case of educational systems because of the relative dearth of change agents, who in some systems serve as the introducers of new ideas. Again some relatively easily measurable operational factors might be included in our instrument. The frequency of attendance at regional and national meetings of professional societies, the number of professional and academic journals received, the nature and amount of community involvement, may provide a partial picture of the instructor's cosmopoliteness. But of even greater importance would be an index of the meaning which these explicit behaviors have for the individual professor. Does he see the professional meetings as a true opportunity for acquiring professional information which will guide his professional life and provide the stimuli for new research to be undertaken by him? Or does he perceive these meetings as an opportunity to increase his status, to find support from kindred souls, and strangthen his academe-centered outlook. Anyone who has attended professional meetings can attest to the fact that they can easily serve the latter purposes. If the professor subscribes to professional journals we would need to know how he tends to use the information he gains from them. If he sees journals as a vital part of his continuing education, providing him with the latest information in his field which can alter both the content and method of his teaching, then they could be a valid instrument for measuring the degree of cosmopoliteness, and thereby serve as a partial predictor for the degree of innovativeness. It goes without saying, however, that the professor who subscribes to journals may not read them at all, and the one who does not subscribe at all may nevertheless read his colleague's or library copies.

Our findings lead us to suspect further that there is a significant difference in the way in which the cosmopolite college professor perceives the university as a whole. A refinement of our instrument measuring attitudes toward non-academic, even non-university, activities might yield highly predictive factors.

It would appear to be reasonable to intuit that the cosmopolite professor's outside references provide him with a perspective of the university which is not available to the localite instructor. While the latter can perceive the university only from inside the system itself, and often only from within his own discipline, the former can in a sense look from the outside in. This perspective may lead the cosmopolite to be more sensitive to the overall needs of the university community, while the localite tends to be primarily concerned with its academic development, frequently restricted to his field. The information channels open to the cosmopolite instructor may furthermore influence his manner of teaching and methods of evaluating students. Thus the significantly more favorable attitude toward field trips, motion pictures, and other non-conventional teaching devices including ITV, may in part be the result of the Pro-ITV instructor's cosmopoliteness. Similarly promptness in completing assignments and student attitudes, which our Pro-ITV respondents favored as evaluative criteria, may well be values which are more related to the respondent's reference groups outside the university, while the insistence on correct spelling may be more indicative of a localite, academe-centered orientation.

Greater communication with sources outside the university may also affect the way in which the innovator views himself and items posing a potential threat to him and the values he holds. Because he has greater knowledge of and frequently relates to the community around the university, he is less afraid of exposing himself to that community. Hence we would expect that he would be less concerned over increased interrelationships between the university and the community. Specifically, he may feel less threatened by having to perform his profession for the community at large over an educational television station. It is likely that he is more open about his abilities and feels less need to be secretive about his knowledge and teaching methods. It is interesting to note here parenthetically that Cater and Williams (1959) found in a quite different setting, namely among industrial firms, that technical progressiveness was indicated by - among other factors - a lack of secretiveness with plant visitors and worldwide travel of executives.

Another interesting factor which will require further investigation possibly with a cosmopolite-localite measuring instrument, is the apparent clustering of individuals with one orientation in certain instructional fields. Is a cosmopolite orientation required or at least desirable in certain disciplines, and less important or even undesirable in others? Again intuitively it stands to reason that those who teach engineering, technology, and communication must be in touch with the "outside" to keep up with developments. But should not the same be expected of the social and natural sciences?

At this point in our discussion we encounter one of the major issues which confront higher education today. An ever increasing number of fingers are pointed at the ineffectiveness of the humanities, social sciences, and to some extent even physical sciences, to equip the student with the tools which make it possible for him to come to grips with the complexities of the 20th Century. An interesting review of studies which have shown the ineffectivensss in one of these areas, the social sciences, is provided by Jacob (1957). Effectivenss as measured by the changes in the values and attitudes of students, Jacob points out, is low -- particularly in those institutions where only classroom instruction is offered. Among the innovations which Jacob indicates would contribute to increased meaningfulness of the material to the student are laboratory practice experiences, which - for the social sciences at least - means involvement of the student (and teacher) in off-campus activities. He goes on to point out that: "Vicarious experience does not deliver the punch, even though 'role playing' techniques in the classroom, and the analysis of challenging case studies and problem situations, do arouse more interest in the course."

All of this is to say that changes in our current teaching methods require major innovations which ought to permeate all academic areas, not just those which are more peripheral to the university system to begin with and which by their nature are more dependent on constant change in tune with the technological developments in the community at large.

Recently much interest has focused on the psychological distance which has developed between professor and student. For example, the so-called Berkeley riots may at least in part reflect hostility toward the increasing impersonal pattern in professor-student relationships on the part of a group of University of California students. This development provides a particularly interesting example of the way in which our proposed cosmopolite-localite dimension may be one factor affecting the social climate of a university. For example, it might be hypothesized that with an increase in the number of cosmopolites, faculty interest in teaching per se declines. This may be so because the cosmopolite's reference groups increasingly become members of his own profession at large, national institutions, and even society-at-large. Thus his immediate concern with his own students and his local teaching role in general may be increasingly less important to him.

It might be postulated that as the number of cosmopolites among the professorial ranks on a given campus increases, the psychological distance between professors and students also increases. This, it might be predicted, would lead to increased feelings of neglect on the part of the students, and may provide the seeds of protest.[4]

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[4] The questions of what might be the proper division of a professor's time and commitment among teaching, research, administration, public service, and private professional practice was explicitly raised by the Berkeley Academic Senate (University of California, 1965).

Thus while the cosmopolite is more likely to tolerate or even promote innovations than his localite colleague, the latter may foster a closer association with his students, and thereby reduce the psychological distance. Here it becomes pretty clear that the hypothesized extreme out-of-university identification of the prototype cosmopolite which may be responsible for his innovative behavior, may be less desirable than a pattern of professional behavior that reflects constructive characteristics of both the cosmopolite and localite orientations.

# Chapter VII.

# A STUDY OF ATTITUDE CHANGE: A NATURAL FIELD SETTING EXPERIMENT

From the discussion in preceding chapters, the reader may have gained the erroneous impression that an individual's attitudes toward a myriad of items in his environment, once formed, are inflexible and unchanging. The truth of the matter is that we needed to "fix" our hypothetical attitude clusters in order to be able to examine and analyze them. Since it is so much a part of everyday experience, it seems hardly necessary for us to point out that an individual's attitudes toward a particular item can and frequently do change. As a matter of fact, just as species and individuals must make physical adjustments to the environment - according to Darwinian theory - in order to survive physically, behavioral scientists generally agree that we must make similar adjustments in our attitudinal network in order to survive sociologically. Therefore, unless we want to live in semi- or total social isolation, we are from time to time pressured to change certain of our attitudes. The extent of such changes, the speed with which they occur, and the discomfort which we suffer in the process of making such alterations, depend in part on the forces in our social environment, and in part on the degree to which the changing attitude is related to other attitudes in a cluster.

The reader will recall from the chapter describing the purpose and methods of the research case history that one aspect of the present investigation became a field demonstration of the dynamics of attitude change. Before we present the empirical data of this aspect of our study, it may be well to look at some of the theories of attitude modification in general and, in a more detailed manner, examine the one which was selected to serve as a basis for our research.

Theories of attitude change

The most widely discussed theories in contemporary social psychology literature concerning attitudes, postulate that an individual's attitude constellation strives to maintain a balance, an equilibrium, or at least a tendency toward such a state, sometimes called homeostasis. This homeostatic model has its origin in physiology, where it has been used to describe the maintenance of constancy of relations in the bodily processes, e.g. maintenance of body temperature, regardless of environmental temperature. It is assumed that any departure from the equilibrium sets in motion activities which tend to restore it. Are the dynamics of our attitudes analogous to this physiological model? There is a considerable amount of convincing empirical evidence that such a model is indeed applicable to certain social psychological phenomena, particularly to an individual's affective cognitions, i.e. his beliefs or feelings about a person or object which is an important component of his attitude toward them. A number of theories have been constructed, all representing variations on the same theme. They generally postulate that a state of equilibrium or balance exists in a belief system, so that the related elements in the system are made up of non-contradictory items which exist in harmony with each other, each being compatible with all of the others. Perhaps we can best illustrate this postulate by again considering a set of beliefs which have a contradictory relationship, as we have in other contexts earlier. An individual may say: "I believe in freedom of the press; not all the news is fit to print; I favor some censorship of newspapers."

According to the postulates of the various balance theories, an unbalanced attitude or belief system tends to shift toward regaining an equilibrium. Thus in the above case, the individual may end up approving of freedom of the press only within the boundaries of what he thinks is printable, or he may come to feel that censorship is too high a price to pay for the elimination of an occasional item beyond that boundary.

Heider (1946) is considered by some to be the father of modern consistency theory in psychology. His "balance theory" provided a detailed account of the phenomenology of relationships beteen individuals. He postulated a triadic cognitive system, one made up of three cognitive components, the person himself, another individual, and a social object. Each of these cognitions could have positive or negative values or signs. A state of balance is achieved when the three values are either all positive or when two are negative. As an example let us assume that we have a dislike for Orthovians (a non-existent ethnic group). A person whom we like also dislikes Orthovians. Our triadic cognitive system has two negative and one positive component and is therefore in balance. Now let us assume that our friend likes Orthovians and acts in accordance with his feelings toward them; now the system is out of balance. In striving for equilibrium, either of two components must be changed. Either we must change our feelings about our friend, or alter our attitude toward Orthovians.

A similar formulation was stated by Newcomb (1953) in his theory of symmetry. His important contribution to this theoretical framework is the postulate that these negative or positive relations between cognitive events may also vary in intensity. Thus he holds that symmetry of the system requires not only identical signs, but is furthermore dependent on equality of intensity.

Osgood and Tannenbaum (1955), who developed the Semantic Differential scale employed in the present investigation, further expanded this theoretical system. Referring to the equalibrium state of a cognitive system as "congruity", these investigators hold that the interactions of cognitive events are such that they modify each other's valences and intensities toward congruity with each other. The degree of such modification is inversely proportional to the original intensity of the isolated events prior to beoming related. According to their formulation, beliefs may have valences of zero, or degrees of positive or negative intensity. Congruity is achieved when signs are all zero, or two are negative, and the intensities are equal. Using our earlier example, we might have a very strong positive affect related to our friend. His slight positive affect for Orthovians will only slightly modify our feelings toward him, or toward Orthovians. If, on the other hand, he feels strongly positive toward them, then the modification of our belief system must be greater. We must either alter our strongly positive feeling toward our friend, or drastically reappraise our negative attitude toward Orthovians.

The present investigators selected for use what is perhaps the most general of the balance theories - the one outlined by Festinger (1957) in his Theory of Cognitive Dissonance - as the theoretical basis of the experimental aspect of their investigation. Again, Festinger's formulations are similar to those described earlier. As he himself points out, by substituting the word "consonant" for "balanced", and "dissonant" for "imbalanced", Heider's theoretical considerations - as far as they go - are not unlike his own. Similarly he points out that Osgood and Tannenbaum's "principle of congruity" is not unlike the principle of consonance, "incongruity" being similar to the concept of dissonance. Thus stated in his own words, Festinger formulates his balance theory as follows: "There is pressure to produce consonant relations among cognitions and to avoid and reduce dissonance." The most significant contribution made by Festinger's theory of cognitive dissonance to balance theory in general is the manner in which it serves to broaden the theoretical base, and to make it applicable to a variety of phenomena in social psychology. An important theoretical extension of this kind is found in the fact that dissonance theory links attitudes with overt behavior, by stating the conditions which are prerequisite for the correspondence of attitudes and behavior. Normally, Festinger points out, an individual's opinions and attitudes tend to form clusters which are internally consistent, and his actions tend to be equally consistent with what he believes. What happens when inconsistencies occur may best be shown by quoting three points which summarize his basic theory:

"1. There may exist dissonant or 'nonfitting' relations among cognitive elements,

2. The existence of dissonance gives rise to pressures to reduce the dissonance and to avoid increases in dissonance, and

3. Manifestations of the operation of these pressures include behavior changes of cognition, and circumspect exposure to new information and new opinion." (1957, p. 31)

Thus, dissonance theory could be used to interpret a variety of phenomena of interest to the behavioral scientist. Many of these could also be interpreted by means of other theories, however. The phenomena which appear to be most accountable in terms of this theory, and perhaps uniquely so, are those which surround the consequences following an individual's choice between two or more mutually exclusive alternatives. Since his commitment to one of the alternatives also means a rejection of the other(s), and since both had undoubtedly some positive and some negative elements for the individual, dissonance is an almost inevitable consequence of such a decision. Since Festinger's theory holds that such dissonance leads to efforts to reduce it, it would follow that the individual would augment in a number of ways the positive values of the chosen alternatives and similarly increase the negative aspects of the one he rejected.

When an individual commits himself to behave in a manner inconsistent with his attitudes or beliefs, we have another situation which creates dissonance. Again the theory is capable of providing us with an interpretation of the resulting phenomena. Festinger calls this situation, in which an individual decides to behave in a manner contrary to his beliefs or publicly expresses an opinion which is in fact contrary to his private opinion, a forced compliance situation. According to him, such forced compliance occurs generally only when the pressure to comply is accompanied by an offer of reward for compliance or a threat of punishment for non-compliance. Again dissonance is to some degree an inevitable consequence of a forced compliance situation. The pressure to reduce such dissonance following compliance is a function of its magnitude, which in turn is a function of the relative importance of the elements forcing compliance. If the reward (or punishment) which compels an individual to act contrary to his privately held opinion is so great as to be grossly out of proportion to his opinion, dissonance will be minimal, and hence the pressure to change his opinion will be equally small. As Festinger points out, a million dollars offered to a person in return for stating a positive opinion about comic books, when in fact he is opposed to them, will give rise to little dissonance. On the other hand, if the reward or punishment is just barely strong enough to persuade the person to act contrary to his belief, dissonance will be maximal and therefore attitude change should be greatest.

Festinger and Carlsmith (1959) put this aspect of dissonance theory to an empirical test. In a rather ingeniously designed experiment, they found that when subjects were paid one dollar to describe to someone else as interesting a task which they knew was boring, the subjects tended to persuade themselves that the task was really interesting and enjoyable. Other subjects, who were paid twenty dollars to do the same, were far less likely to change their privately held opinion. These results confirm the theory. Specifically they showed that if a person is forced to improvise a speech supporting a point of view with which he disagrees, his private opinion moves toward the position advocated in the speech, provided the reward is great enough to elicit such expression and not so high as to eliminate the resulting dissonance.

The experimental phase of the present investigation at Metro U. became a further test of this aspect of Festinger's (1957) theory. Instead of using verbal techniques, which must be considered rather abstract involvement, or role playing, our investigation made an effort to actually involve participants in a real-life situation, that is, behavioral involvement. The subjects which participated in the operational phase of our investigation were corporeally and socially involved in a positive forced compliance situation, and were not simply isolated in an "experimental climate" or a role playing situation. Nevertheless, in effect our experiment became a further test of the following derivation from Festinger's theory of cognitive dissonance:

> "If a person is induced to do or say something which is contrary to his private opinion, there will be a tendency for him to change his opinion so as to bring it into correspondence with what he had done or said." ... "The larger the pressure used to elicit the overt behavior (beyond the minimum needed to elicit it) the weaker the above mentioned tendency."
> (Festinger and Carlsmith, 1959, pp. 209-210)

### The "forced compliance" effect in a natural setting experiment

In this, the experimental phase of the present investigation, we sought the answers to two basic questions:

1. As a theoretical exploration of the dynamics of attitude change, to what degree can a "forced compliance" situation, as defined by Festinger, consisting of an ego involving participation in instructional television, modify faculty attitudes toward ITV?
2. Aside from our dissonance theory investigation, what promise does the video-tape recorder, as used in the faculty participation situation described above, hold as an improvement-of-teaching device?

Although our experimental design was in many ways similar to that used by Festinger and Carlsmith (1959), it differed significantly from theirs in some respects. Most important among these was that the forced compliance situation in the present study was far more "real" than the laboratory setting used by the other investigators. The fact that some 11 of their 71 subjects admitted that they suspected that the forced compliance was not authentic, is indicative of the drawback of laboratory setting experiments in social psychology.

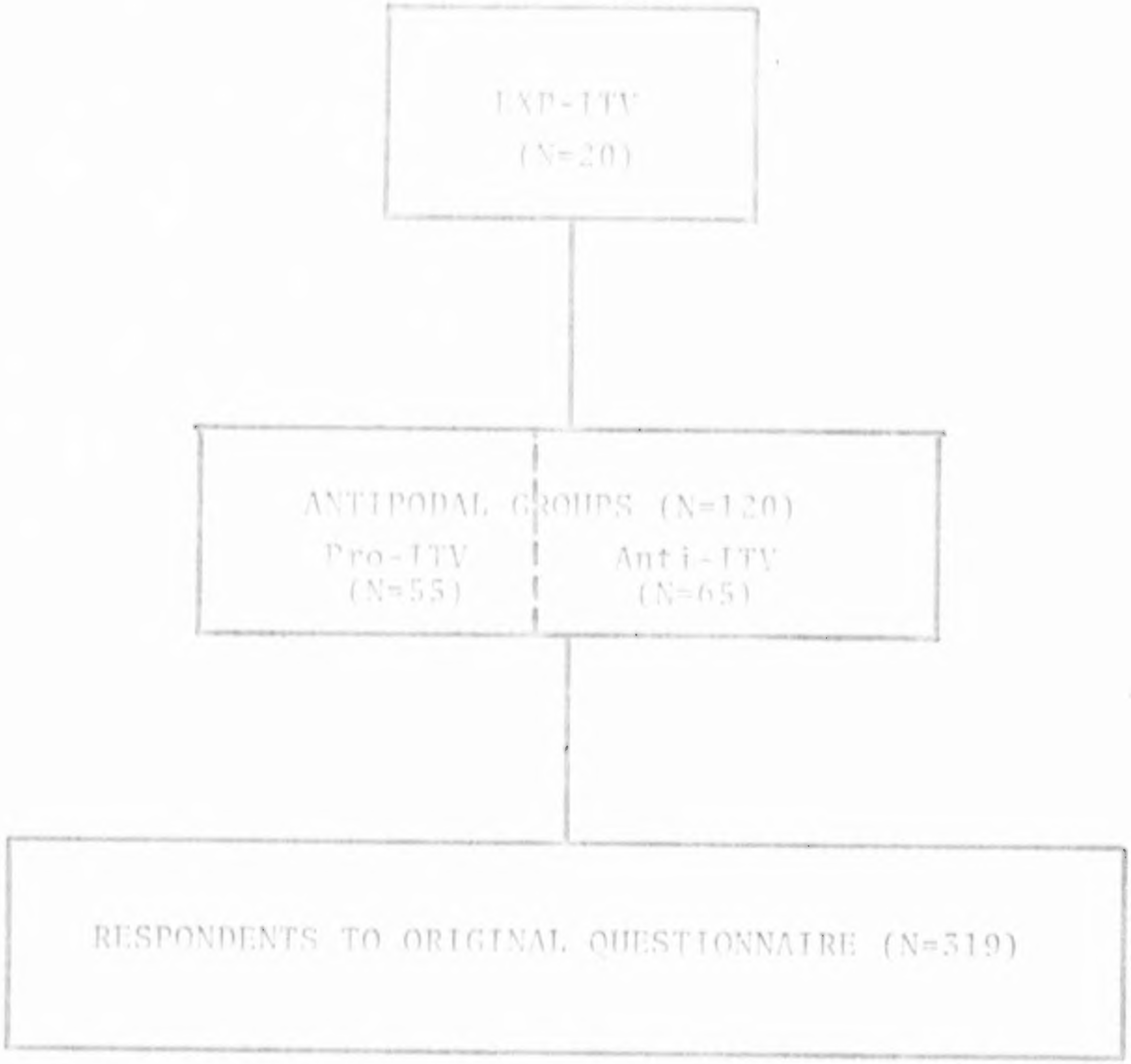
On the other hand, our experimental design had the disadvantage that we were able to collect data for only a small number of experimental subjects, a condition brought about primarily by economic factors. As reward for their participation, subjects in the experimental phase, in addition to receiving their regular salaries, were given the choice of being relieved of some of their teaching load or of receiving compensation for overtime work in return for their participation. Our reward situation appeared to meet the criterion for predicting the greatest amount of attitude change according to Festinger and Carlsmith (1959), namely a reward just high enough to elicit the behavior which might be contrary to privately held opinion. However, an empirical verification of this with the situation and subjects involved, would obviously have been difficult if not impossible.

## Subjects and experimental procedure

The reader has already become acquainted with some of the operational procedures used in the present experiment. Since this information is somewhat scattered throughout the preceding chapters, it might be helpful for us to review briefly the major steps leading up to the experimental phase.

*Subjects*: On the basis of the responses to our original questionnaire (N=519), we established two antipodal groups: 1) *Pro-ITV* - Individuals who responded most favorably to instructional television (N=55); and 2) *Anti-ITV* - Individuals who responded most unfavorably to instructional television (N=65). Among these 120 subjects were the 20 faculty members representing two departments in the College of Arts and Sciences (Departments "A" and "B"). These two departments, sounded out earlier by the senior author, were found to be "laggards" with respect to ITV, having rejected official overtures to use television in their required large-enrolment introductory courses. From the initial questionnaire and the Pretest Interview, it was judged that these 20 faculty members were divided almost equally into Pro-, Anti-, and Neutral-ITV groups, but - as we have stated - their previous collective behavior reflected resistance, which in a sense made them an ideal sample for a study of the dynamics of attitude modification.

Thus we can now identify a third group, subsumed within the two others, and label it EXP-ITV -- 20 faculty members selected to participate in the experimental phase. Except for this latter phase, all of the groups described above received the same experimental treatment, i.e. participated in the Pretest and Posttest Interviews. Therefore, we are now able to identify 20 experimental subjects and 100 control subjects. A graphical representation of the subject categories is given in Figure 4.


EXP-ITV
(N=20)
ANTIPODAL GROUPS (N=120)
Pro-ITV
(N=55)
Anti-ITV
(N=65)
RESPONDENTS TO ORIGINAL QUESTIONNAIRE (N=319)

NOTE: Subjects in each of the categories shown were also members of the lower categories.

Figure 4. Graphic presentation of subject categories.

After completion of the Pretest Interviews, given to both the control and experimental subjects, each of the latter - the EXP-ITV's - was asked to prepare, produce and participate in at least one 15 minute presentation to be recorded on a video-tape recorder. As mentioned earlier, this relatively new electronic device is similar to the familiar audio-tape recorders, providing immediate playback and erasure features for both the audio and visual components. For this reason it appeared to be the logical and ideal instrument for use in this study, because the investigators felt that it afforded the maximum instructional self-improvement possibilities inherent in any medium in the history of education. After completion of these tapes, the participant was then asked to examine and react to the tape produced.

In addition to these individual efforts, members of each of the two departments (which had been hostile to ITV instruction) were asked to collaborate in the production of several video tapes, which represented a cooperative effort.

EXP-ITV subjects were offered consultation, ITV reports, books, pamphlets, and other ITV information by the investigators. Basically, however, the planning and evaluation of each instructor's video-tape presentation was left entirely up to him. It was postulated that this would cause the maximum ego-involvement sought in our investigation, which - on the basis of the results - appeared to be the case. Subsequently few of the instructors availed themselves of research staff assistance to any appreciable degree. As a matter of fact, when participants actively sought detailed direction and structure, the project staff simply emphasized that it did not want to give anything but general assistance. It was felt that it was essential to the fulfillment of the theoretical foundation of the study for the participants to be left to their own devices as much as possible.

The Television Production Coordinator, a member of our project team who assisted the faculty members in the production of their tapes, provided a detailed written report of the quality of each tape produced and the verbal and non-verbal behavior of each participant "on camera".

Finally, each experimental subject was asked to write a report concerning his experience and his opinion of the video-tape recorder as an improvement of teaching device.

This summary description of our subjects and experimental procedure shows that our participants were not literally "forced" to take part in the experimental phase of the study, as was the case in Festinger and Carlsmith's study, in which compliance was forced as a requirement for a course in introductory psychology. Yet in a more subtle way, our subjects' compliance could be defined as "forced", as defined by Festinger and Aronson (1960). It seems reasonable to assume that, once departments "A" and "B" as a whole had committed themselves to participation, there would be subtle or direct intra-group pressures exerted upon the individual participant to meet departmental responsibilities. Finally, subsidization received by each participating faculty member in a sense made him a paid consultant, a role quite similar to Festinger and Carlsmith's (1959) paid assistants.

The experimental design reviewed in the preceding section provided us with three essentially independent measures of the impact of our experimental phase. First we have the observations recorded by the television production manager. Second, we can compare the responses to the 18 items which appeared in both the Pretest and Posttest Interviews, and would therefore indicate attitude shifts as a result of the experimental manipulation. We can make such comparisons for both the experimental group and the control group. Finally, we have the participants' own reports reflecting their experience and evaluation of the video-tape recorder.

### Impressional data obtained by the production manager during experimental phase of study

These observations are of necessity highly subjective. When we consider, however, that they were made by a professional trained observer, carefully recorded during and after each subject's performance, these phenomenological data become most valuable. To present these reports in detail would not serve much purpose; however, so that the reader may get some idea of the reaction of our non-innovators when "forced" to use a technical innovation, we present summaries for ten of the participants.[1]

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[1] A more detailed summary of these reports appears in Appendix 7.

EXP-ITV "A" He is cooperative during pre-production tape. Seems assured that video tape recorder is a good experiment. After lengthy conversation, still resents administration attempts at cramming ITV down instructors' throats - with no relief for putting lectures on TV. He seems to want to be off-campus a great deal.

EXP-ITV "B" Brings almost completed lecture outline ready to go, in good shape, using films. After finishing pre-production tape he seems rather indifferent to the whole process. This is an apparent change from his original attitude which was rather enthusiastic. This change is probably due to the complexity of production. (It seems that most of those who go to such elaborate preparations lose interest when the actual taping begins, perhaps because they feel relegated to an inferior position.) His VTR is tremendous, with a total of 17 splices, but still it is overall a good tape. He seems to bring generally a strong sense of the "theatrical" into his performance. Still, most of the operating staff regarded this subject's performance as one of the most dynamic.

EXP-ITV "C" No pre-production tape for him, he has been on VTR many times before and saw no need for it. His final tape is good, presenting a good lecture. He reacted favorably to the taping session.

EXP-ITV "D" He is ready to make full tape. Appears to be very sociable. Completed project shows good tape, fair performance. Read almost entire lecture from notes, showing considerable advance preparation. Displayed much ego-involvement with the project.

EXP-ITV "E" Pre-production tape is good; he asked for help freely. Final tape also good, using some film and charts. His is a clean and uncluttered presentation. He tried hard, and seems convinced that TV can be used as a "tool".

EXP-ITV "F" Pre-production tape good. He is very critical of himself. While watching the "playback" he made careful notes. He got the point of how VTR can be used for teaching-improvement, probably for the first time. He is not sold on using too many charts and other visual aids. The quality of his tape is good. He seemed to have learned quite a bit from the experience. He was pleased with how little time it actually took to make the tape.

EXP-ITV "G" During pre-tape he is fairly hostile, wants to get in as much as possible. He seemed fairly disinterested in the whole thing but he did give it a good try.

EXP-ITV "H" He is cooperative during pre-tape. His final tape is good, but he probably made only fair use of TV's potential as far as his course is concerned. He was cooperative and well-prepared. He admitted how well he got along without students around. Seemed unconvinced about teaching improvement possibilities of VTR; however, he wanted to improve his own performance by doing it again someday.

EXP-ITV "I" Produced ten minute pre-production tape. He is worried about his accent and pronunciation. Generally he produced a good tape. His content matter is rather complex. He adapted to TV very nicely and seemed to evaluate his experience easily.

[illegible] models for demonstration purposes. He did a good job, was cooperative, had worked hard in preparation and was easy to direct.

Generalizing on the basis of these admittedly subjective observations, we feel justified to conclude that the elements necessary for "compliance" were present in this experimental phase. It appears as though the professors, once having taken the ITV bull by the horn, so to speak, were willing and able to put their best effort into the project. Despite occasionally disinterested or even hostile behavior, the participants went through with the project, and for the most part produced adequate if not outstanding final tapes.

Attitude changes as reflected in the Pre- and Posttest Interviews

If our study has demonstrated that social psychological research in the form of careful observations and rigorous theory testing can lead to valuable insight into human attitudes and behavior, it has also abundantly manifested the host of vicissitudes encountered by this type of investigation. Our subjects, the professors, were neither in test tubes nor cages. Before, during, and after the experimental phase, they continued to live in their everyday world with its myriad of influences quite beyond the control of the investigators. These and other factors which will be pointed out later made the treatment and interpretation of data in this section particularly difficult, and a real challenge even for the experienced senior investigator.

The theoretical basis of this aspect of our data analysis required a slight re-grouping of our control subjects. The reader will recall that our EXP-TIV group of 20 was bracketed by a control group of 100 subjects. This latter group was now divided into two units.

The first of these sub-groups, labeled Control Group I (CONTR.I), though not actively involved in the experimental phase, nevertheless had heard about the video-taping effort. This group was comprised of 29 subjects, ten of whom reported they had heard opinions "against" the VTR experiment, four had heard an opinion "in favor" of it, four had heard mixed feelings expressed toward the project, and 13 stated that they had heard something about it but were vague about the specific attitudes they had heard expressed. This information was obtained at the beginning of the Posttest Interview.

The second of these control groups, classified as Control Group II (CONTR.II) because they had not heard about the experimental phase, was made up of 71 respondents who had been involved in the Pretest Interview and 68 in the Posttest Interview. This information was obtained during the Posttest Interview.

Thus our matrix for comparing responses to the repeat questions to determine attitude modification, can be graphically seen in Figure 5.

In analyzing the differences in responses obtained to the original and the re-interview, an absolute value placed on tests of significance was impossible for two critical reasons:

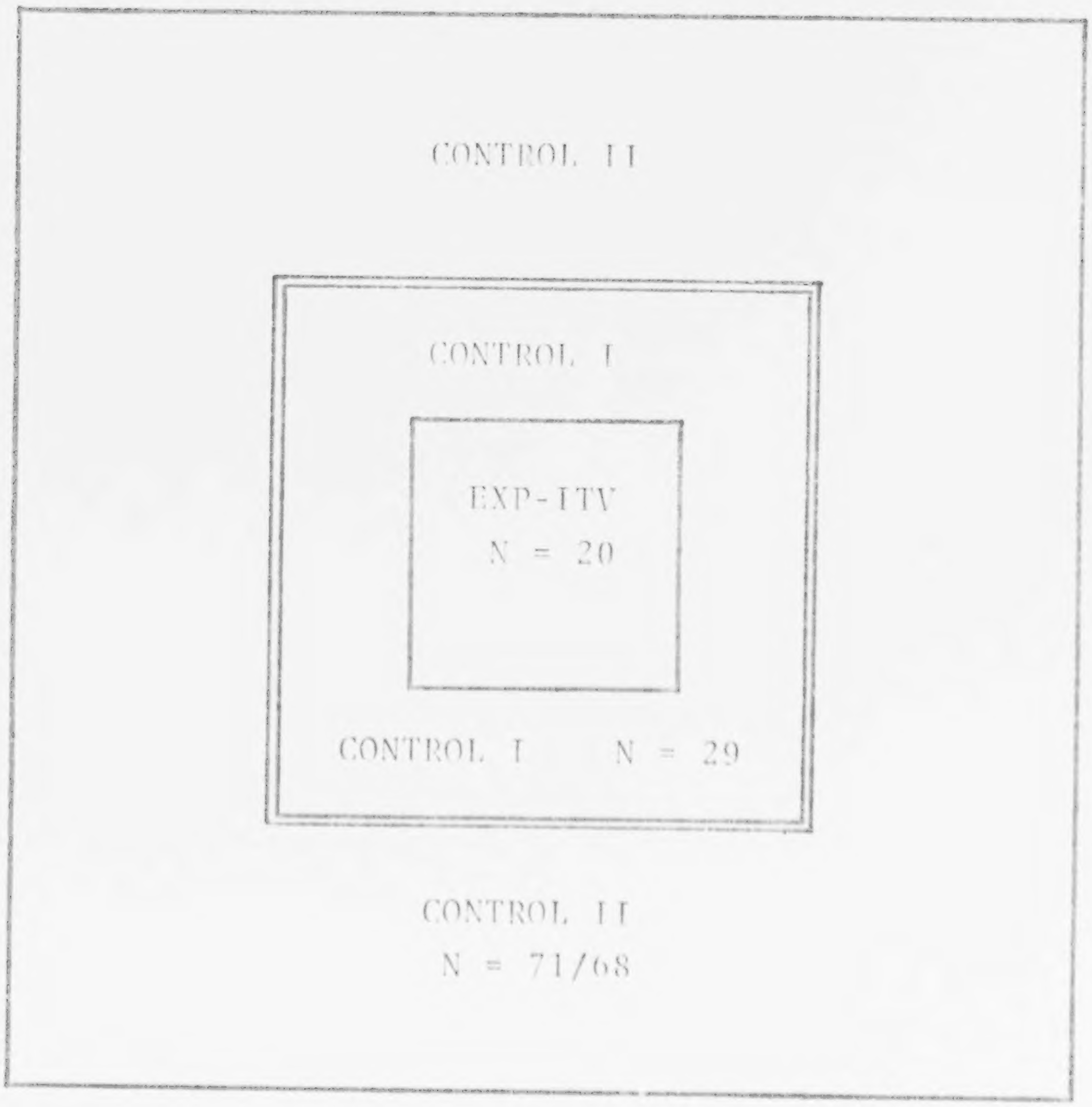
CONTROL II
CONTROL I
EXP-ITV
N = 20
CONTROL I N = 29
CONTROL II
N = 71/68

Figure 5. Categories used for comparison of pretest to posttest differences. The two groups within double line either participated in or had some knowledge of the experimental phase.

1. The groups of subjects who had some knowledge of the videotape experiment consisted of a combined total of 49 subjects, indicating that we are dealing with a relatively small sample. In determining significance levels, sample size and absolute differences correlate negatively. Therefore very high differences would have been required to yield statistically significant results.
2. More important, in order to carry out the content analysis which provided us with the highly revealing attitudes of the faculty pro and con ITV - discussed earlier - extremely discrete response categories had to be created. Thus we found ourselves with a relatively small number of responses in each of a large number of response categories.

Consequently in the data presented in this section, tests of significance which yielded levels of confidence even approaching .10 are reported, but of course these should not be interpreted as indicating anything more than trends.

However, for the EXP-ITV group of subjects, a careful person by person qualitative analysis of attitude change was also undertaken. These data, to be presented at the conclusion of this chapter, will not only include the Pretest and Posttest differences, but also an analysis of the personal reports from both the subjects and the Television Production Coordinator.

In the EXP-ITV data, 5 items yielded differences between the responses to these questions which approached significance at the .10 level of confidence. Two of these shifts suggest modification in a direction more favorable to ITV. These were expression of increased "willingness to accept ITV as a replacement for classroom lectures", and an absence in the Posttest of the response, "I don't know, but I am against ITV", which had occurred 3 times in the Pretest.

Remarks expressing the thought that ITV would "limit the number of qualified instructors", indicating a shift in a less favorable direction, appeared once in the Pretest and 5 times in the Posttest Interview. Also on the anti-ITV side of the ledger, the number of miscellaneous reasons given against ITV increased from the Pretest to the Posttest. The impression that ITV would "ease teaching load and give more time for research" shows another attitude shift, by appearing 7 times on the Pretest and only twice on the Posttest.

Only two items appeared in the CONTR.I group which approached significance at the .10 level of confidence. As was the case with the EXP-ITV group, a favorable shift occurred on the item related to acceptance of replacement of classroom lectures by ITV. The other item, which is extremely difficult to interpret within the Pro-ITV/Anti-ITV framework, concerned the relationship of television instruction to "size of class". Five respondents on the Pretest perceived large classes as more suitable for ITV than small classes, as compared to one respondent on the Posttest.

Oddly enough, we found the highest statistically significant difference involving Pretest and Posttest responses among the CONTR.II group, which presumably were least influenced by the experimental phase of our investigation. Chi Squares for six response categories were significant at least at the .05 level of confidence. We think that these apparent attitude changes may be spurious, a contention for which we will present some basis in the next section. Nevertheless, to complete the statistical analysis, we present the items which showed such modification and its extent. Two items indicated a change in the favorable direction, significant at the .01 level. These were "ITV gives bad results" (Pretest 7, Posttest 0), and "ITV impersonal and mass production" (Pretest 3, Posttest 0). Similarly, two categories of items reflected changes significant at the .05 level of confidence. These were "Favor ITV" miscellaneous responses (Pretest 19, Posttest 31), and the overall ratings on the favorable-unfavorable-neutral scale of responses to 4 different ITV items (Pretest 33-34-4, Posttest 31-24-13). This group showed only one unfavorable shift which was on the item "ITV does not motivate students" (Pretest 4, Posttest 11), significant at the .05 level of confidence.

We need to emphasize again that the small number of subjects in the two critical groups, the EXP-ITV group and the CONTR.II subgroup, coupled with the small number of responses found in many of the response categories, greatly reduce its meaningfulness. Any attempt to read into these findings anything more than an indication, in very broad terms, of direction of attitude shifts _for_ or _against_ ITV would be unjustifiable. Even when we now effected a somewhat more gross comparison of Pretest and Posttest results, the above caution must remain in effect.

The discrete responses to the 18 items were now collapsed into three categories which were established by using the same rating technique used in the original content analysis. With the aid of this categorization of ITV attitudes as favorable, no opinion, or against, we were able to construct a 2 x 3 Chi Square table of all responses to the same question on the Pretest and Posttest Interviews.[2] It also permitted a more molar examination of the shifts which occurred in each of the three categories for each of our three groups. We shall present this overview first. Because there was an overall reduction in the responses in all cases, ranging from 5% in the EXP-ITV group to 24% and 25% in the CONTR.I and CONTR.II groups respectively, a comparison of the actual frequencies in each of the response categories would be misleading. Instead we present in Table 9 the percent of total responses falling into each category, for the Pretest and Posttest Interviews for each of our groups. A further breakdown of the EXP-ITV data is provided by presenting separately the percentages of total responses for Departments "A" and "B".

As we will see shortly, the changes in percentages shown in the table are not statistically significant at a very high level because of the small number of subjects who produced these responses. Nevertheless, the table does indicate definite trends in attitude changes which are in the expected direction. Thus the overall EXP-ITV shows an increase of 7.7% in the favorable responses with a corresponding decrease of 6.6% in the unfavorable column. Department "A" shows

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[2] We are indebted to the late Carl Hovland for suggesting this type of analysis. Dr. Hovland's death was a great shock to all concerned with the project. His discussions with the senior author in the beginning stages of the investigation were of great value.

Table 9

Percentage of Total Pretest and Posttest Responses

Categorized as Favorable, Unfavorable, and Neutral

| Group | Total Responses (100%) | Percent Favorable | Percent Neutral | Percent Unfavorable |
|---|---|---|---|---|
| EXP-ITV | | | | |
| Pretest | (238) | 48.3 | 5.5 | 46.2 |
| Posttest | (227) | 56.0 | 4.4 | 39.6 |
| Dept. "A" | | | | |
| Pretest | (107) | 44.9 | 3.7 | 51.4 |
| Posttest | (113) | 58.4 | 2.7 | 38.9 |
| Dept. "B" | | | | |
| Pretest | (132) | 49.2 | 6.8 | 43.9 |
| Posttest | (114) | 53.5 | 6.1 | 40.4 |
| CONTR I (Had heard) | | | | |
| Pretest | (357) | 48.5 | 3.0 | 48.5 |
| Posttest | (272) | 53.6 | 4.4 | 43.0 |
| CONTR II (Had not heard) | | | | |
| Pretest | (697) | 49.4 | 3.3 | 47.3 |
| Posttest | (527) | 50.3 | 5.7 | 44.0 |

the highest apparent attitude shift, with an increase of 13.5% on the favorable and a 12.5% decrease on the unfavorable side. Less change apparently occurred in the Department "B" group, with only a 4.3% shift toward a more favorable and a 3.59% shift away from an unfavorable position. Similar changes were recorded for Control I, showing 5.1% more favorable and 5.5% fewer unfavorable responses. Clearly the least change occurred in the Control II group, which shows only a .9% increase in the favorable responses and a 3.3% decrease in the unfavorable column, most of which apparently shifted to the neutral categories, increasing them by 2.4%. A graphic comparison showing percent of change in the number of favorable and unfavorable responses for each of the three main groups is shown in Figure 6.

Along with the results of the Chi Squares computed for the differences in the responses between Pretest and Posttest Interviews (see Table 10), it was thought the reader would also be interested in a presentation of those items which were most representative in attitude shifts.

For the EXP-ITV group the difference between the Pretest and Posttest distribution of responses yielded a Chi Square value significant at the .26 level of confidence -- a relatively low change level, but as we indicated in the preceding discussion, one that indicates change in the hypothesized direction, with the "favor" responses increasing and the "against" responses decreasing. In this group the mean number of responses per item for the 48 repeat

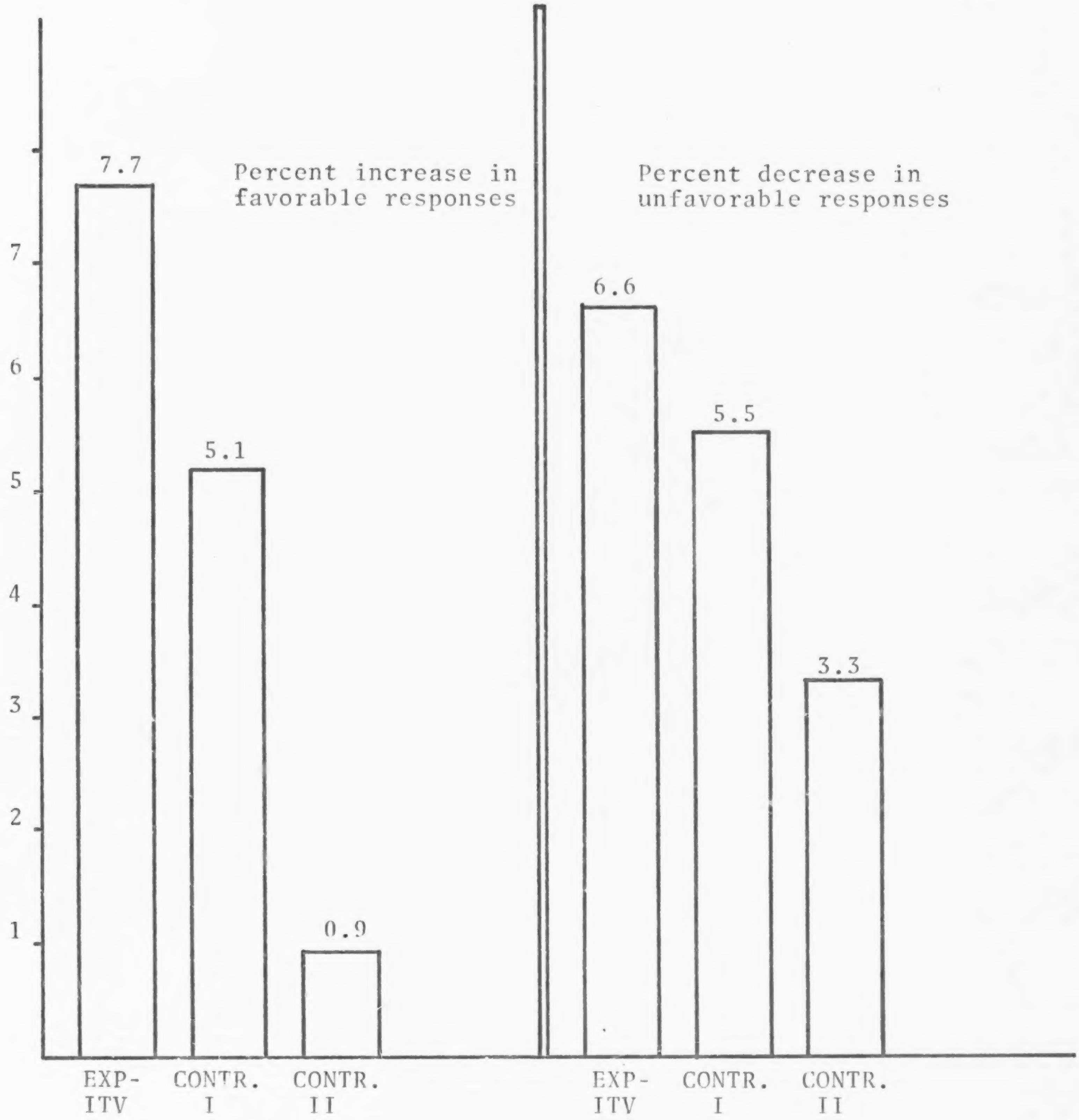

Figure 6. Percentage increase in favorable responses and percentage decrease in unfavorable responses from pretest interview to posttest interview for 3 groups of subjects.

Table 10

Chi Squares Computed Between Pretest and Posttest Total Number of Responses to 48 Identical items

| Group Category | No. Subjects | Chi Square | p |
|---|---|---|---|
| Experimental | 20 | 2.77 | 0.26 |
| Department "A" | 9 | 4.28 | 0.12 |
| Department "B" | 11 | 0.44 | 0.95 |
| Control I | 29 | 2.16 | 0.35 |
| Control II | | | |
| Pretest | 71 | 1.50 | 0.60* |
| Posttest | 68 | | |

*See text.

questions was 10. It was arbitrarily decided to examine all items which resulted in a response shift of 5 or more responses. A shift in the favorable direction was defined as a reduction of "against" responses, and/or an increase of "favorable" responses. There were 12 such items for the EXP-ITV's, 8 of which shifted in a favorable direction. These items and the number of shifts were: "Lack of personal contact"(14); "Extent of replacement of classroom instruction" (12); "ITV instruction doesn't motivate students" (6); Miscellaneous feelings against ITV instruction (6); "Interaction left out" (6); "Outstanding lecturers available" (5); "More difficult to teach on TV" (5); and "Number of qualified ITV instructors is limited" (5).

Responses which shifted in the "against" direction were: Miscellaneous "favor" ITV responses (10); "ITV useful as a supplement" (6); and "ITV eases teacher's load" (5).

When the experimental group was again divided by departments, the Chi Squares computed on the differences in the Pretest and Posttest distributions of favorable, neutral and against responses were significant at the following levels of confidence: differences in the responses of Department "A" at .12, and Department "B" at .95. Department "B" decreased in responding from Pretest to the Posttest in all 3 categories, while respondents from Department "A" increased in favorable responses and decreased in unfavorable responses.

Differences in the Pretest and Posttest responses of the CONTR.II group yielded a Chi Square significant at the .35 level of confidence. The mean number of responses per item for the 48 items was 13. It was decided to examine any specific item which resulted in a shift of responses of 7 or more items in the same direction. Of the five items that evidenced such shifts, the following three, again shown with their respective frequency of change, were in the favorable direction: "Imagine yourself against ITV" miscellaneous responses (15); "Eases teacher's load" (7); and "Lack of personal contact" (18). Items which for this group shifted in the "against" direction were: "ITV instruction reaches more students" (5); and "ITV useful as a supplement" (11).

The CONTR.II group was the only group in our study which suffered a slight attrition. Of the 71 respondents who participated in the Pretest Interview, three could not be contacted for the Posttest session. In computing the Chi Squares for the Pretest versus Posttest distribution of favor, no opinion and against responses, it was discovered that neutral responses in this group accrued approximately equally from those favorable or against ITV in the Pretest. It is argued that to include these neutral responses would introduce a spurious indication of attitude shift with the kind of data and using a procedure such as Chi Square. With these neutral responses included, the Chi Square value would be 4.53 with a 0.11 level of confidence. For this reason, the Chi Squares obtained with respect to Pretest and Posttest comparisons of individual response categories, discussed earlier, are probably likewise spurious. Omitting these "inflationary" responses the differences were significant at only the .60 level of confidence.

The mean number of responses per item for the CONTR.II group was 25. It was decided to examine those items which showed a shift of 13 or more responses in the same direction. This criterion was met by 2 items shifting in one, and 2 shifting in the other direction. We find that among the "Against ITV" responses, "Lack of personal contact" appears 57 times in the Pretest but only 14 times in the Posttest responses. Miscellaneous reasons given when the respondent "imagined self against ITV" decreased from 34 responses on the Pretest to 12 on the Posttest. The 2 items which showed a shift in the against direction were: Favor ITV; "Reaches more students" (Pretest 43, Posttest 11); and "ITV useful as a supplement" (Pretest 27, Posttest 6).

In spite of the difficulties we have encountered in the statistical analysis of our data, we can identify a definite trend in the predicted direction. Comparing the Chi Square levels of significance for our three main groups with each other, we can see that the change in the experimental group shows the highest significance level (.26), followed by the CONTR.I group (.35), and that the lowest level of significance (.60) was for those who had the least involvement, CONTR.II.

The experimental group: a subject by subject comparison

As indicated in the preceding section, the small size of the experimental group combined with the nature of the Chi Square test of significance, clearly suggested that the mere lack of statistical significance between the Pretest and the Posttest - though admittedly in the predicted direction - does not preclude the possibility that critical attitude shifts occurred. In "natural behavioral setting" research such as was incorporated in our investigation, an empirical as well as statistical analysis of the results appeared to be a critical part of the procedure.

First of all, the Posttest Interview results were compared with the reports of both the Television Production Coordinator and those written by the participants themselves. Comparisons of responses, when collapsed to the overall 3-point scale used earlier, i.e. favorable, neutral, unfavorable, indicated that the reports correlated to a surprisingly high degree with the Posttest Interview responses.

A subject to subject comparison of Pretest and Posttest attitudes toward ITV on the 3-point scale was then effected. Table 11 reflects the results of this analysis.

It can be observed from Table 11 that although the attitudes of a total of 9 professors were apparently unaffected by the experimental situation, a total of 9 actually shifted to an attitude more favorable toward ITV than had been reflected in the Pretest, while 2 shifted in a more unfavorable direction.

## Table 11

### Frequency, Direction, and Nature of Attitude Shifts of Professors Involved in VTR Phase of Investigation

| Direction | Departments & Frequencies "A" | Departments & Frequencies "B" | Total Frequencies |
|---|---|---|---|
| **Favorable** | | | |
| Unfavorable to favorable | 1 | 1 | 2 |
| Neutral to favorable | 3 | 1 | 4 |
| Unfavorable to neutral | 1 | 2 | 3 |
| Total | 5 | 4 | 9 |
| **Unfavorable** | | | |
| Favorable to Unfavorable | 0 | 0 | 0 |
| Neutral to Unfavorable | 0 | 2 | 2 |
| Favorable to Neutral | 0 | 0 | 0 |
| Total | 0 | 2 | 2 |
| **Unchanged** | | | |
| Favor | 2 | 2 | 4 |
| Neutral | 0 | 1 | 1 |
| Unfavorable | 2 | 2 | 4 |
| Total | 4 | 5 | 9 |

It is interesting to note that of the unchanged group, 4 were originally favorable to ITV, 4 were unfavorable, and 1 was neutral.

So these data do reflect patterns consistent with the theoretical formulations concerning attitude change involving the effects of a "forced compliance" situation. It could be hypothesized that, to some extreme or "dogmatic" attitudinal groups, "dissonance" may be introduced into existing cognitive structures with the least effect on the basic nature of this structure. In the present investigation this was reflected by either "no change" in attitude, or a shift to a neutral feeling. But only in 2 instances in the entire sample do we observe an extreme shift from an against position to a favorable one.

It could also be hypothesized that if a situation - resulting from conditions similar to those in our experiment - prove to be "consonant" to subjects who already favor ITV, this attitude would shift in an even more favorable direction. Although this was not recorded by our relatively crude 3-point scale, impressionistic evidence indicated that in 2 instances involving the apparently "unchanged" group, a shift to an even more favorable attitude did occur.

As would also be theoretically expected, the "neutral" group should have recorded the greatest instance of attitude change. Six of the 9 subjects who reflected an attitude shift were, indeed, scaled as neutral on the Pretest Interview responses. Of course, in the neutral group, 2 subjects shifted in an unfavorable direction as well. In a way, this should not be regarded as an unexpected reaction when one considers the potentially ego-threatening as well as ego-involving atmosphere produced when, for the first time, a professor must contemplate the portent of his own image projected from a television tape. In fact, it is surprising that this potentially negative effect of the experimental procedure occurred in only 2 instances.

Perhaps the most significant result of the present investigation, in behavior rather than cognitive terms, is the fact that 1) of the two departments involved, one subsequently began offering a telecourse, a move which the department had previously rejected, and 2) the other department spontaneously began using some of their own video-taped material as a supplement to traditional teaching efforts.

The authors of the present report are acutely aware of the fact that along with the complex of other internal institutional effects on these departments, it would be overstating the situation to assume that in this instance "correlation necessarily meant causation", particularly since the data from our control group were, in the strictest sense, inconclusive. However, informal discussions with members of these two departments suggest that, all things considered, the experimental situation did play a role in departmental decision-making with respect to the use of ITV. However, lacking empirical data on the actual decision-making processes in these two departments, the extent of the effect of participating in our experimental situation - overt or covert - can, of course, not be adequately determined.

Our Pre- and Posttest data, like all attitude measures, give us merely inferential data concerning actual behavior. As indicated earlier, Metro U. has since at least temporarily curtailed all telecourses. So at best, a situational rather than long-range effect was all that was possible even if our experimental situation had a maximum effect on the participating departments.

## A brief review of the research case history

The case history presented in the preceding chapters is an example of the course of an innovation in a university community. In essence it deals with an exploration of social psychological dimensions of the university faculty previously reflected in such publications as The Academic Mind (Lazarsfeld & Thielens, 1958). The research was also directed toward exploring attitudes and values of professors and conditions which may precipitate attitude modification in general. Faculty resistance to the use of educational telvision was selected as a focal point since it was a highly salient and controversial innovation at Metro University. One aspect of the present research case history was a field demonstration of the dynamics of attitude change as described by Hovland, Festinger, Sherif, and others, using faculty attitudes toward teaching by television as a target.

A psychological instrument, which included an adaptation of the Osgood Semantic Differential plus a series of "teaching behavior" items, was administered to the faculty of a large Southwestern, urban university. Attitudes toward an array of concepts including respondents' attitudes toward the use of television as a function of their own philosophy of education, personality organization, and general background were measured on evaluative, potency, and activity dimensions. Completed instruments were obtained from 319 instructors or nearly 80% of the entire full-time faculty. Two extreme groups (favorable and unfavorable toward instructional television) of approximately 60 faculty members each were established on the basis of their responses to the teaching by television items included in the instrument. These groups were requested to participate in follow-up depth interviews. Virtually all agreed. Comparisons between professors favorable and unfavorable in their attitudes toward television instruction were made on the basis of the variables measured in the present study in order to explore the correlates of this attitude.

A factor analysis of some 300 responses to the Osgood items was also effected.

Among the findings from the Osgood data is an indication of the self-image of the professor. Eighty-five percent of those responding tended to regard themselves as "good" teachers. They further regarded themselves as rough, honest, active, fair, strong, fast, pleasant, hard, and valuable. The responses from a student sample indicated, as would be expected, that professors are perceived by students in a clearly less favorable light than professors perceive themselves.

One question in the interviews, employing a quasi-role-playing projective technique, concerns the possibility of hiring Charles Van

Doren (English professor involved in the television quiz "scandals") as a university instructor. A majority, acting hypothetically as a university president, would not have hired Van Doren, with the principal response category indicating that they considered his television performance and subsequent testimony "immoral" and at odds with the general ethical code of a professor. Those favoring hiring Van Doren felt, as revealed in the principal response category, that a professor should not be responsible to a university for activity off the campus which did not affect his teaching ability. They also felt that fallibility must be accepted - even in professors.

Responses to depth interviews using projective questions selected from those formulated by the California Group indicated that our subjects tended to be, on the whole, at least as authoritarian as other professional, social, or business groups in our culture. In addition, the results suggest that many professors have developed a facade of overt responses which tends to conceal authoritarianism.

Two large university departments which had been unwilling to become involved in television instruction were selected to participate in an ostensibly intensive improvement of teaching program which included an evaluation of the video-tape recorder for self-improvement of teaching based on actually taping individual course presentations with the assistance of the university's television production staff.

By virtue of a group of control conditions, this group provided the nucleus for the observation of potential attitude change in an "ego-involving", "forced compliance" situation, as theoretically outlined by Festinger. The results from this portion of the investigation also provided an opportunity to explore the self-improvement of teaching possibilities inherent in the video-tape recorder, as evaluated by two university departments.

An analysis of responses to the Pre- and Posttest Interviews, the Osgood instrument, the TV Production Coordinator's report (a daily log of participants' television production performance), and personal reports prepared by the subjects, revealed dramatic modifications of their attitudes toward ITV in a generally more favorable direction. One of the two departments, in fact, elected to change their previous decision and present a telecourse, while the other began to use its taped efforts as a standard portion of regular courses. (Of course in the context of a life situation, in spite of controls, other factors in the social climate of the university cannot be absolutely ruled out as contributing to these changes.)

Incidental to these findings, the interview and personal report data also indicated considerable support for the idea of using the video-tape recorder as a self-improvement of teaching device.

Many statistically significant differences were present between the Pro- and Anti-ITV groups. To give some examples: Pro-ITV professors tended to be less "ivory-tower", more variable in both teaching and evaluation techniques they used, were more interested in research, and had more teaching experience. They tended also to be more tolerant of psychological interviews, night students, and student activities. They also were less preoccupied with economic rewards in teaching. A less puritanical view of ethics was also significantly more evident in the group favorable to the idea of teaching by television. Pro-ITV professors were less likely to have colleagues who share their view. They thus do not receive the social support of their colleagues which is received by Anti-ITV professors, the majority of whose colleagues often share their views.

The factor analytic results were also provocative. They indicated that attitudes toward television were sometimes imbedded in "pure ITV" factors. That is, some groups of respondents apparently had developed specific and isolated frames of references dealing only with television instruction (e.g. good-bad, active-passive, or weak-strong). Still others seem to synthesize their feelings concerning television into already existing cognitive structures, some dealing with such things as a generalized "concrete-realism" in their approach to teaching in general. Still others dealt with an "overall philosophy of education factor", such as concern more with "content" than with "method", and so on.

Although the three Osgood factors often converged in the expected directions, exceptions were frequently enough noted to voice again the question of the "purity" of particularly the Activity dimension.

In conclusion the research case history yielded a rich assortment of data concerning the university faculty and an interesting example of the course and diffusion of an innovation in a university community. Findings included: 1) evidence of an over-rating of its own teaching skill and harsh judgment of members of the profession who err; 2) a "forced-compliance" situation coupled with a resultant "ego-involvement" appears to modify feelings concerning teaching by television in a generally more favorable direction; 3) marked differences in personality, philosophy of education, and behavior characterize the professors "favorable to" and "unfavorable to" teaching by television, including a less "ivory-tower", more experimental and flexible approach to the business of teaching; 4) attitudes toward television instruction ranged from being imbedded in "pure ITV" factors to being only a secondary loading in factors representing a variety of frames of references toward the total university teaching situation; 5) the video-tape recorder emerged as a promising technique for the self-improvement of faculty instruction.

# Chapter VIII.

# GENERALIZABILITY: SOME VIEWS ON INNOVATION EXPRESSED BY FACULTY MEMBERS AND ADMINISTRATORS AT NINE OTHER UNIVERSITIES

Inevitably data such as we have presented in the preceding sections raise the question of generalizability. Are the findings of a study such as ours generally applicable to other populations of college professors and innovations other than ITV, or are these findings merely artifacts of the particular sample which we chose to examine? Although the authors are fully aware that a definitive answer to this question requires a replication of our investigation at other universities, it appeared nevertheless to be of some value to submit our findings to a more subjective test, by presenting them to members of other academic communities and asking them to respond to them in a relatively informal interview setting. The findings which are reported in this chapter are not, therefore, the result of the same systematic investigation employed in our research case history. It was felt however that they might give some indication of whether the results of our research case history were at least fairly universal or whether they were peculiarly related to ITV and Metro University. Hence the gathering of some further data from nine additional colleges and universities, some of which were like and some quite unlike Metro University, was completed. As indicated earlier, they differed in size, source of sponsorship and support, and geographical location -- Southwest, West, East, and Middlewest.[1]

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[1] Specifically the universities and colleges visited were: Hofstra University, Michigan State University, San Francisco State College, Southern Methodist University, State University of Buffalo, Texas Christian University, Trinity University, University of Pittsburgh, and Washington University.

Procedures and interview format

The procedure for this phase of our investigation was as follows. The senior author contacted a prominent member of the faculty at each of these nine institutions and asked him to serve as a local faculty consultant to our project and to arrange individual appointments with three or more of the institution's key administrators.[2] These included presidents, vice presidents, deans of faculty, deans of arts and sciences, deans of graduate schools, and others. Where appropriate, the top administrators directly concerned with television instruction, audio-visual programs, etc., were also included. Thus, these individuals essentially represent a sampling of approximately 27 administrators who were quite directly involved with important decision making and the diffusion of innovations on their respective campuses.

A second group which the local faculty consultant was asked to call together was a heterogeneous faculty group representing as many academic areas as possible, including the humanities, social sciences, physical sciences, education, and the more technical fields of engineering, architecture and others. Both the administrators and the faculty participants were assured that neither their individual names nor the name of the institution would be used in reporting specific findings. It was felt that granting such anonymity would contribute to a more free expression of opinions and feelings.

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[2] We wish to express our appreciation to our faculty consultants, Drs. David Berlo, Richard Bugelski, Robert Hamblin, Shephard Insel, Kenneth Kramer, Cyrus LaGrone, Jack Matthews, Alvin North, and Harold Yuker. Without exception they did a conscientious job of arranging our visits and scheduling the appropriate interviews.

After these arrangements were made, one of the authors would then visit the campus. The senior author made six such visits while the junior author visited three of the institutions. Typically the interviews with individual administrators would be limited to 20 - 30 minutes each. Meetings with the faculty groups generally consisted of one to two hour sessions, frequently around the luncheon table. Wherever possible all participants, the administrators and faculty members, were given an opportunity to read an earlier report of the case study. However, to assure that all participants had some background information, the investigator briefly presented the highlights of the Metro University study and then posed a number of open-end questions. Although these questions necessarily varied some in format, depending on the particular institution, the respondents, and the setting, they essentially consisted of the following content:

1. If an innovation was to be started on your campus, how would you go about instituting it, or how would you think it would be instituted?
2. Give some concrete examples of innovations that were attempted on your campus, and trace the effect of these innovations.
3. How do you (or did you, or would you) react to the success or failure of the utilization of instructional television on your campus?
4. What is your reaction to our description of the cosmopolite or broadly innovation accepting professorial prototype versus the broadly innovation rejecting localite or laggard

type? To what degree are groups which would fit these attitude patterns present on your campus? If they are, are there academic areas where these prototypes are found in greater or lesser concentration? Where do you think resistance to innovation is more likely to take place?

5. Can you give a general picture of the decision making process with respect to innovation on your campus?

As can readily be seen, these questions were general enough to generate as much discussion as possible. An effort was made to preserve informality particularly in the meetings with faculty groups and to present the questions in such a manner as to avoid undue defensiveness. More specifically, the reader will note that the questions were designed not only to provide information concerning the generalizability of our more narrowly focused ITV findings, but also to probe carefully into some of the other dimensions which we thought might be related to the broader field of innovation in higher education, for example, questions relating to the personality make-up of the professor which relate to the findings of our factor analysis reported in an earlier chapter. In a sense then we feel that while these interviews give us some indication about generalizability of our empirical data, they are even more helpful in the development of further hypotheses concerning the broader issues, to be tested in future research.

## Analysis of responses

### Characteristics of innovations

In almost every interview or discussion one of the first challenges which had to be met by the investigator was that of defining the concept of innovation. This is not to say that the interviewees did not have their own definitions for the term; it frequently became obvious to the interviewer, and in many cases the interviewee, that individuals differ sharply on what to include as an innovation. We had come to accept the term as relating to an object or idea which represented a major change in the methods employed to achieve the basic goals of a given institution. For our purposes it was irrelevant whether a particular innovation was new in the absolute sense, or new to the particular school. For example, we would accept the recent introduction of a language laboratory on a particular campus as an innovation, regardless of the fact that many schools adopted such programs years ago. The question of what constitutes a major change is an even more difficult one to answer. As we will see in the following paragraphs, what appears to be a minor change in, let us say the curriculum, may - to a particular institution - loom as a major revolution, while to another it represents a minor readjustment to be handled by a memorandum from the office of the academic dean.

But the issue went much further than that. Most of our respondents felt that generalizations concerning innovations were difficult if not impossible. Frequently it was suggested that the use of more restrictive modifiers might make some generalizations possible, but this frequently led to very narrow definitions of questionable usefulness. Categorizations of innovations included those based on the nature of the innovation itself, e.g. technical versus non-technical change, or those involving subjective change rather than changes in methodology. Other classifications of change were based on the number of institutional sub-structures potentially involved. Thus, changes within a department were viewed quite differently from those which involved entire divisions, e.g. the college of arts and sciences, the engineering school, etc. Closely related to these categories were those which were based on the original source of the innovation. It was pointed out that changes proposed by the university board and instituted by the president frequently meet with a different response than those which are instituted by a department chairman. Furthermore, it must be pointed out, these categories are not necessarily mutually exclusive. Some of our interviewees felt that the response to a technical innovation introduced on a university-wide basis by the administration would be quite different from the response to the same innovation introduced at the departmental level. This led the authors to conclude that the term "innovation" without modification may be of limited value, particularly in an empirical investigation, where the matter of precise definition is imperative.

Turning now to the specific innovations which were described to us by administrators and faculty members, we found - perhaps not surprisingly - very few technical innovations. Most of the changes reported to us involved curriculum or course content changes with a minimum alteration of teaching method. Most frequently mentioned were the launching of an honors program, a coordination of the core curricula, for example to institute a mandatory humanities course during the first and second year in the college of liberal arts. Innovations which had as their goal improving the relationship between students and the institution were also mentioned frequently. Spurred on no doubt by the recent student unrest in many parts of the country - which we discussed earlier - administrators and faculty members were attempting to find ways to provide students with more participation in the affairs of the school, or at least to provide more adequate channels of communication to reduce the ever more visible psychological distance between students and faculty. However, these attempts were generally quite timid, and their highly experimental nature was repeatedly pointed out. The limited range of such changes can be illustrated by the comment made at one of the schools which had just developed a faculty-student senate. It was pointed out that while more student participation in some of the affairs of the school was desirable, students should not have a voice in the development of course curricula because they are on the campus only a short time, and are in no way qualified to be involved in decisions at this level.

All of what has been said above is not to deny the very real impact that these changes can have on a particular institution. A change from a liberal arts core curriculum of several individual courses taught by members of separate departments, to a two-year humanities course coordinated by a supra division can constitute a significant innovation with all the characteristics we have attributed to this form of change. But there are, we suspect, highly superficial changes which have little or no effect on the major processes of an institution. Often these changes are not even new to the particular institution. It appears as though a teaching system goes along for some time, then suddenly there is a need for a slight variation, for example, a curriculum change, or shifting from the Great Books idea of Mortimer Adler to a system of more traditional teaching. Is this in fact an innovation? Actually, of course, the traditional teaching existed before the initiation of the Great Books course, so that it is not really a new idea. Many if not most schools appear to play a kind of game of musical chairs with innovations, where one innovation replaces still another and so on. Obviously the number of such changes is fixed, so that eventually the system returns to a method which had been tried before and which had either been abandoned or become in a sense covertly institutionalized, that is institutionalized but held in abeyance to be reactivated at a later date. We found that one of the areas most frequently involved in this circle of changes relates to the best use of the faculty's time. Let us assume an institution at a given time feels that the best use of the professor's time is for him to lecture twice to large classes of undergraduate students and for the rest of his time make himself available for consultations in a tutorial sense with individual undergraduate and graduate students. After this has been tried for awhile, the pattern is changed slightly. The professor's lecture sections are now supplemented by discussion period led by graduate students. Later the school finds that graduate students are inadequate in their instruction, the large lecture sections are eliminated and the individual professor now teaches a large number of smaller classes. After this is seen as an uneconomical use of his time, the school reverts again to the large lecture section. Almost every institution included in our sample reported to us innovations which could be placed at some point in this cycle.

A similar pattern develops in connection with changes in teaching methods. Many schools have continuous or periodic teacher evaluation and committees charged with the responsibility for improvement of teaching. The innovations reported in this area are even more sparse than in those previously reported. It seems clear that these committees usually have extremely vague and diffuse criteria, and within the safe confines of their own membership they enigmatically discuss ideas for getting the professor to pay more attention to his students, to spend more time on preparing his lectures, to involve himself in more or less research, or to become more involved in the total life of the academic community. As one of our interviewees pointed out, "Our evaluation committee is for the most part a mutual admiration society." One of the institutions in our sample reported some success in evaluating teaching methods by opening these committee sessions to invited students and members of the board and community supporters of the school. It was too early to say whether this will have a real impact on the changing of teaching methods since the program had barely started, but the faculty's response to this innovation was far from unanimously favorable.

Sources of innovations

The sources of innovations in higher education are as diverse as the innovations themselves. We found that almost every segment within the academic community can become the initiator of change, including students and individual faculty members. In addition to these there are several sources of innovation outside the university. There are a number of interesting issues which we feel need to be explored in relation to these sources. To begin with, as we have mentioned elsewhere, research in the diffusion of new methods in agriculture and new products in the pharmaceutical field has emphasized the important role of the "change agent" in the form of a county agent in the first and a drug detail man in the second case. Such change agents are virtually nonexistent in higher education. Book salesmen who contact faculty members cannot be considered change agents in this sense, since they are merely promoting more of the same products. (Parenthetically, we might mention that a small number of textbook publishers have become interested in producing educational films to be used as supplements to textbooks. However, as one editor pointed out to one of the authors, the first thing that will have to be done is to train salesmen to sell professors on the idea of using visual aids in general, before being able to sell them specific films.) Some faculty members seem to be aware of the fact that little effort is being made from the outside to persuade them to adopt new teaching methods and techniques. Several of our respondents readily admitted their own ignorance about such devices as video-tape recorders, teaching machines and other technical innovations, but they were quick to point out the fact that there was to their knowledge no source for the dissemination of such information.

Innovations do seem to follow certain predictable routes -- predictable, that is, for a particular institution. One hypothesis here is that these patterns are closely related to the more basic nature of the institutional structure. In a highly permissive setting, particularly if the administration purposely avoids "shoving things down the faculty's throat," most innovations originate at the faculty or departmental level. There is some indication that once such a pattern has become established, changes initiated at the top tend to be opposed by the rank and file faculty member regardless of their merits. Conversely, the highly structured institution generates innovations at the board and administration level and filters them down through the department chairmen to the faculty. In a few schools the power seems to rest with the department chairman, particularly where such chairmanships are permanent appointments and the top administration may change more often than the chairmanships. In several cases in our sample each segment, the administration and faculty, feels that the responsibility for initiating innovation rests with the other group, and one gets the rather humorous picture of two people listening on the same telephone line with neither of them saying anything.

Even where there are sources for generating ideas about new approaches in higher education, economic factors tend to present a serious barrier to their adoption. Most university budgets are fixed from year to year, and there are indications, though this would require very careful analysis, that these budgets tend to support the existing system. Allocation systems seem to provide little or nothing in the way of built-in mechanisms for change. We were often told, of course, that many innovations in higher education can be accomplished within existing budgets, but drastic changes requiring rechanneling of funds often take years to clear the budget hurdle, if they clear it at all. Basically we would hypothesize that the economics of the system, the entire budgeting procedures, too often appear to be dedicated to maintaining the status quo.

There are a few financial sources outside the university which are sometimes available for the introduction of a specific innovation on a given campus. Various agencies, public and private, have made such funds available, particularly among those institutions ranking in the lower part of the academic scale, institutions frequently attended by socially and culturally deprived students. However, we would hypothesize that such guaranteed financing in no way assures the institutionalizing of a new idea. If channels within the system for the diffusion of innovations are nonexistant, there is a very high probability that they will become accepted only at a very superficial level.

One other source of innovation deserves mentioning here, and that is private industry in the local community. This source of new ideas and their economic implementation is far from widespread, but we found it to be an important factor in at least two institutions. Frequently it involves only a very narrow academic field, usually in the more technical areas like engineering or business administration. Innovations here include two-way television hook-ups between a large manufacturing plant and a university lecture room, providing corporation personnel as visiting lecturers in the university's classroom. Obviously such innovations serve a number of purposes. Most important among these may be the exchange between university and industry which itself may give rise to new innovations simply because it forces members of the academic community to relate to those outside the system.

### Diffusion, institutionalization and the reversion phenomenon

Our discussions on the nine campuses clearly indicate the need for intensive empirical study to determine the fate of an innovation in higher education over a long period of time. It seems abundantly clear from our interviews that overt acceptance and what we will call institutionalization of the innovation are two quite different stages with a number of intermediate steps. We would hypothesize two major patterns of development. Both would begin with an overt acceptance of a new idea or method, i.e. they would begin with the operation of an ITV program; but while in one pattern this will lead to institutionalization, in the other there is a kind of "pseudo-acceptance". Although the program may continue over a considerable period of time, it never really becomes part of the institution, and at a given point a convenient excuse is found to terminate the program. Under these circumstances the chances for it being brought back appear to be very slim indeed, even though the hardware, the cameras, the receivers, etc. are still available, and are sometimes readapted for other uses such as adult education or public relations. In the other pattern, where institutionalization has taken place, such acceptance may in fact be quite covert, and although the program may be discarded at a given point in time, the innovation is added to the pool of educational methods with a fairly high probability that at some future time it will be brought back. This hypothesis leads us to advocate great caution in drawing conclusions simply on the basis of overt presence or absence of an innovation. Empirical research is needed to search for factors which indicate covert acceptance. One key to this question might be the conditions under which the innovation was rejected. If the original overt acceptance led to an experience which was perceived by most or all of the members of the system as having been basically negative, then chances for institutionalization are unlikely and we would predict that the probability is very low that the innovation, once abandoned, will be reinstated. On the other hand, if the termination of a new program is brought about by economic factors, or by a less generalized opposition - for example, simply because one powerful administrator was opposed to it - some institutionalization may have taken place, with at least some possibility of a reinstatement if the circumstances change. These are purly conjectures on our part, but we feel that they are important hypotheses which should be investigated further.

In part the high mortality rate of innovations in higher education may be a function of the original acceptance in yet another way. From our interviews we have learned that administrators and faculty members alike find it difficult if not impossible to evaluate the merits and demerits of a new idea prior to its adoption. Hence most if not all innovations are adopted on an experimental basis: the tentativeness of such acceptance was frequently pointed out to us. When we are told by an administration, "We have set up a faculty-student senate on a trial basis for one year; if it doesn't work we can always disband it, just as we earlier disbanded the faculty-student forum," then it appears to us as though the built-in mechanism for abandoning the innovation would almost certainly prevent any degree of institutionalization. In other words, it is not just the experimental nature of the original adoption, but the frequently immanent termination facility that prevents total acceptance. Once an innovation has been terminated the system clearly has only two choices: one is to move on to another innovation, and indeed, as we have pointed out earlier, some systems move from one innovation to another; and the other is a reversion to the old tried and true methods. The latter appears to be more often the case, but this is another area in which we feel further research is needed.

## Instructional television - some major confirmations of our findings

Because one major purpose of these interviews was to obtain responses to our specific ITV findings in our research case history from a broad sample of teachers and administrators, a considerable amount of time was allocated in each interview to elicit attitudes toward this medium innovation. The overall picture emerging from these interviews is amazingly clear-cut on this point: most if not all of our findings are confirmed. Admittedly our sample was too small to permit a truly scientific generalization. Nine institutions, 27 administrators, and some 75 faculty members do not constitute an adequate sample of higher education in the United States. Furthermore, it must be remembered that we did not meet with the faculty members individually but rather in groups, which may have had a decisive influence on their responses. Nevertheless we feel that these groups and individual administrators represented enough of a heterogeneous sample to lead us to postulate that the findings of our case study are not restricted to one institution, although there may be some question of whether they are in fact restricted in part to one - or at least a particular type - of innovation.

The first thing that clearly emerges from our discussions on other campuses is that attitudes toward ITV appear to transcend the structural and other characteristics of the institution itself. It appears as though attitudes toward ITV are more generic to the teaching role as perceived by the faculty member, although our sample was too small and our interviewing techniques inadequate to do anything more than hypothesize on this. But we were impressed with the apparent invariance of attitudes toward ITV, regardless of the size of institution, its urban or rural location, its sponsorship, or even its past experience or inexperience with television as an instructional device.

An overwhelming majority of our interviewees on these campuses were antipathetic to ITV. Perhaps the most amazing aspect of their negative attitude was the similarity of the reasons they gave for resisting ITV. Without exception, wherever reasons for resisting ITV were elaborated, we found patterns of responses similar and in some cases identical to those reported in our research case history. Some of our interviewees gave sound, rational and objective reasons, but at the same time a myriad of by now familiar irrational, emotional responses were given, implying that ITV represents some sort of a threat to their very existence, or that it is a kind of toy which has no place in any seriously academically-oriented educational institution.

One of the most interesting examples of the kind of reasoning engaged in by sophisticated professors which further cautions against value judgments in psychological research in innovation in universities, is the provocative responses which were received from two professors on different campuses. One was a distinguished behavioral scientist with a record of unusual interest in innovation in his own field, and one who would be described as a "cosmopolite" by any standard. With respect to television instruction, he stated that one thing that cannot be ignored in the study of the use of television in teaching at universities is that perhaps the eventual rejection of television instruction by most professors could be interpreted as a valid reaction. In other words, the use of television instruction may comprise a critical trial period during which time professors really seriously consider its use but reject it on a sound basis, namely that it really doesn't do the job in the most subtle sense. A professor at another institution, a very productive biological scientist, also demonstrated an unusual interest in innovation in his own field and was a person for whom the label cosmopolite would be equally appropriate. Reacting to a point made in our discussion that universities haven't essentially changed the pattern of instruction almost from their very inception, this scholar pointed out that this persistence of the old ways of doing things simply suggests that they stem from the essential needs in the situation, and offer - in the long run - the greatest utility in satisfying these needs.

In other words, here are two respondents who take the stand that the slowness of universities to adopt innovations is no particular indictment of the rigidity of the university as an institution or of its professors, but rather is support for the basic effectiveness of the traditional way of doing things that persists in the university.

Apparently the type of television facilities employed in a given program had little effect on faculty attitudes. This was one of the questions of particular interest to us, since Metro University had an open-circuit channel, i.e. one that can be received through any television set in the community, and it was thought by some that this public visibility might have contributed to the resistance among the Metro faculty. Apparently this is not a major contributor to the negative attitude. The nine institutions in our sample in this phase of our investigation had had a wide range of experience with ITV, ranging from complete inexperience to open-circuit. Some had used open-circuit and then switched to closed-circuit. There is some indication that public scrutiny might appear to be undesirable in a few academic areas where potentially controversial material may be presented, such as in the teaching of history, political science, or even biology where discussion of evolution might bring criticism in some parts of the country. However, it seems that the resistance to ITV is not really predicated primarily upon fear that the general public will view the presentation. A much greater fear appears to be that television, open or closed-circuit, opens the presentation to the scrutiny of one's colleagues within the university. Thus the possible judgment of fellow faculty members appears to be the more likely source of resistance than the possibility of public reaction to controversial material. We are reminded of the almost universal but unwritten ethic that in the university in general (except in medical and dental and perhaps in some other professional schools), professors ordinarily do not enter one another's classroom. Why should this be, aside from the belief that this is an extension of academic freedom. It is possible that many professors have traditionally been loath to expose their presentation to the scrutiny of their peers. If this attitude is held as universally as we suspect it is, it becomes readily understandable that there will be strong resistance to any form of broadcasting of class proceedings which increases the probability that others might be viewing the professor's presentation. The fact that such viewing could be effected covertly would only increase his anxiety.

Having now postulated that neither the characteristics of the institution nor the type of television equipment appear to have a major bearing on faculty ITV attitudes, the next question we explored is whether there are perhaps specific academic areas which are more adaptable than others to teaching via television. Here we found no common agreement among our interviewees even within one institution. The only generalization we can make is that most agreed that while ITV may have some value in other academic areas, in their own it was virtually without merit. By way of example we report the conversation between a professor of music and a math professor during one of our luncheon meetings. The music professor began by pointing out that in his field, television was of no use at all since he is totally dependent on getting feedback from the student. He, the professor, must be sure that the student understands one step before moving on to the next. However, it seemed to him that in an area like math, which consisted purely of information dissemination, the presentation of formulas to be memorized by the student, ITV could be most helpful. Not so, replied the math professor. In teaching mathematics, it is imperative that the student understand the earlier steps leading to a new mathematical formulation, and only by receiving feedback from the student could the professor be sure that the student is ready for the next step. However, said the math professor, it seemed to him that a course in music, e.g. music appreciation, could very well and efficiently be taught by television. Such conversations typically took place on most of the campuses visited.

A topic somewhat related to the above controversies was that of student attitudes toward, and performance in, ITV courses. We were told by ITV-experienced instructors that students generally resist enrolling in television courses, a confirmation of the findings reported earlier. As far as student performance is concerned, we appeared to get two diametrically opposed responses. On those campuses where careful analysis of grades had been undertaken, we were told that no significant differences were found between the performance of ITV and non-ITV taught students. Where no such empirical data were available, on the other hand, our respondents postulated that students perform more poorly in television courses. The reasons for such decrement in performance, it was often pointed out, are related to the "qualitative differences" of the two methods and the increase in the psychological distance between professor and student which result from depersonalized television instruction.

One of the most unequivocal findings of our observations on these nine campuses relates to the pattern which characterizes the history of Instructional Television as an innovation. That this pattern transcends all differences between institutions appears to us almost certain. Not only do our interviews confirm this, but at a recent conference[3] of experts directly involved in the various phases of the educational television movement and other educators, essentially the same pattern was described. There are, to be sure, minor variations in this pattern, but the following description appears to be typical.

It begins with some source of "seed" money, a private foundation or the federal government or in some cases a source within the university itself. Concurrently there is some enthusiastic advocate of the innovation. He may be a member of the faculty, an administrator, a department head, or possibly an influential board member. Because of his enthusiasm and the availability of funds, the program will be started "on an experimental basis." After installation of the equipment, the first one or two courses are telecast and they may continue for quite some time. In some cases the program is terminated after one showing of the complete course, in another instance it is continued for some years, but generally the program is discontinued for one reason or another. The reversion phenomenon appears despite the original enthusiasm for the program, and the institution returns to the old teaching methods used prior to the introduction of ITV. This is a clear case of what we described earlier as incomplete institutionalization. ITV has never become part of the educational out-put of the institution although it seemed at first to have been genuinely accepted. In some cases total abandonment of ITV is avoided. At one university we found, for example, that the courses were still continued but only for instruction in the evening school program; at another, which was joined with six other schools via a television cable, the viewing room, the set, and the program were still available to the students, the school still paying its membership dues in the association, but no particular effort was being made to urge students to watch the program. As one administrator pointed out, occasionally a student or two will wander into the viewing room, but usually because they can think of no other place to go.

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[3] Meeting of the Media Standards Committee of the Southern Region Education Board relating to an inter-institutional television project, of which the senior author is a member.

Quite aside from the seed money or the enthusiastic proponent, innovations may be introduced because of some crisis situation. Rogers (1962) points to the fact that a crisis tends to emphasize the relative advantage of an innovation and affects its rate of adoption. Several of the schools in our sample were in fact confronted by the general crisis in higher education, namely the campus population explosion, and for the most part our information would confirm Miles' (1964) findings that, "Sheer size and growth of an (educational) system tend to force adaptive changes and increased concern for innovation." On many of the larger campuses the increased enrolment is proceeding ahead of the stepped-up building program. This increases the attractiveness of an innovation such as ITV. But it is also apparent that as soon as the building program catches up, the need for ITV rapidly diminishes and it is frequently abolished.

Later, when the upper limit of potential classroom space again lags behind enrolment, the institution may return to the use of the medium. This is a hypothetical case - we did not find all of these factors at any one school - but the factors involved here are important to an understanding of the question of institutionalization of an innovation. For example, it would be interesting to determine to what extent provisions are being made on these campuses for adapting these buildings for television use at a later date by providing closed circuit TV facilities over which programs could be telecast to dormitories and other buildings. Some schools reported that they were making such provisions.

The reasons which are given for terminating an ITV program on a particular campus are extremely varied, some appearing to be quite superficial, such as the fact that there was no one qualified to operate the equipment. In other cases the reasons were more basic. Often we were told that the original need, real or perceived, was no longer present. More buildings had been built, more instructors hired, enrolment reduced. Another frequent reason for termination was that the funds which had first generated the program had come to an end, or that the enthusiastic faculty or administration proponent of the program had left the campus or had become cooled in his enthusiasm. In some cases it was clear, and our interviewees were completely open in admitting, that faculty hostility and perhaps student resistance had delivered a death blow to the program. Again we were impressed that all of these reasons are in fact indicative of the lack of institutionalization of the innovation.

Those institutions which had not had experience with ITV but had considered the possibility of initiating a program usually gave economic factors for abandoning the idea. There can be little doubt that ITV introduces into the learning system a need for certain kinds of hardware, and indications are that whenever you bring hardware into the learning system you are likely to encounter resistance. As the senior author pointed out in a review of Bereday & Lauwerys' Communication Media and the School (Evans, 1960), the fact that there was such a high rate of failure of audio-visual programs might well be traced to the amount of hardware and effort it required on the part of the system and its members. This can become a contributing factor, but it is questionable whether it is the primary one. If an innovation which requires a great deal of hardware is introduced into an ongoing program this undoubtedly requires relearning and retraining on the part of the members of the system, and this they are going to resist. Implicit in many responses and explicit in others was a strong resistance to change. Faculty members and administrators seemed to be saying again and again, I really don't want it because it takes too much effort. Even if they had the money to introduce the innovation it would mean that they would have to learn to do something in a new way, and that requires effort.

The nature of quality education

One of the charges that is frequently levied against instructional television, teaching machines, and other media innovations is that they water down the quality of education. Hence it was of considerable interest to us to explore with our respondents those factors which they felt contributed to quality education. In general our respondents agreed with the convictions expressed by the majority of the Metro University faculty. Quality education is achieved in face to face confrontation of professors and a small class of students. Some of the smaller colleges in our sample were actually operating on this type of program and justified their higher tuition rates by pointing to the smaller student-faculty ratio. However, on the larger state-supported campuses, such a program is obviously impossible. However, the idea of quality education based on small student-teacher ratios survives even in these large institutions. What we found in at least three universities we visited was the attempt to build up within the university two sub-systems, each with a different role and different methods. One system offers large enrolment courses which can accommodate up to two or three thousand students. For these presumably quality education cannot be offered, and their education is limited to transmission of information. Within this larger system there is an attempt to build a small academic community. This system, sometimes housed in a special part of the campus called "University College", and sometimes just a so-called honors program, generally consists of a small but highly select group of honor students, perhaps 500 in number. Again this appears to be a dichotomous response to innovation. While the move toward an attempt to provide quality education for at least a small number of students in itself represents an innovation on some campuses, the methods of teaching in these small systems are far from innovative; as a matter of fact, there frequently is a reversion to the most archaic forms of teaching. Conversely and ironically, the large enrolment system may be forced to use technological devices or of necessity use some new ways of being more expedient in providing mass education. A most interesting hypothesis arises from these observations. If in any learning or teaching system we arrive at a point where we are ready to say that the best we can do in coping with sheer numbers of students is simply to insure some information gain, without worrying about the previously highly valued qualitative aspects of the learning situation, will instructional innovations like ITV be more readily accepted? We think it is a valid hypothesis that the more the emphasis in a course or curriculum is simply on information gain, the more likely ITV appears to be acceptable as a means of communicating this information.

Quality education, we were repeatedly told, involves more than just transmission of information. This extra ingredient, our interviewees felt, is present in the more traditional teaching methods, but lacking in ITV and teaching machine programs. It becomes clear that in the study of acceptance and rejection of innovation in higher education we must attempt to identify and analyze this extra ingredient. We predict that this will not be an easy task. At least we repeatedly encountered great difficulty in getting our respondents to even hint at what the factor or factors might be. If one takes an overt manifestation of what the professor expects of his class at the end of the semester by looking at his exams, they generally will be found to measure little more than information gain. Repeatedly we found that while this extra ingredient is of paramount value to the professor, no one appears to be able to define it. With this in mind we are led to hypothesize that this educational plus is not clearly defined in the professor's own mind, that in-depth interviews might reveal that he is worshipping something that is rather amorphous and ambiguous. In fact, this provides a not unreasonable explanation of why so much of the resistance to innovation which appears to threaten this special quality education is vague in purpose and direction. It may simply be something which traditionally is passed on from one generation of professors to another. To attack this problem empirically appears to be difficult but not impossible. We might begin by looking at what happens in the university setting besides simply the transmission of information and the teaching of skills. What, for example, happens in the intimacy of an honors program that goes beyond the other kind of mass oriented teaching and learning programs? Perhaps a partial answer can be found by examining the goals of the college professor. What is it he is trying to transmit? Some of our respondents told us that it is knowledge for knowledge's sake, but is it true that this can only be communicated in a very intimate situation, and cannot be transmitted to larger groups? In this connection another question which could be answered empirically is whether these professorial goals vary from discipline to discipline. We would hypothesize that there would be differences between, say, the physical sciences and the humanities.

## The innovating and innovation resisting professor

Whenever the discussion turned to the personality factors characteristic of our two prototypes, the innovator and the laggard, the Pro-ITV and the Anti-ITV, a lively and at times heated discussion ensued, particularly in the faculty groups. The investigator usually reviewed the findings briefly by pointing out that in our case study we found that those who resist innovation appeared to be more narrowly restricted in their interest within the university, that they carried larger teaching loads, that they tended to be more resistant to psychological testing, that they tended to be a little more anxious in general. We pointed out that we found significantly more resisters in certain disciplines, namely in the humanities rather than in others like the technological fields. On the other hand, we reported, in the case study the innovative professor who favored ITV tended to extend his interest beyond the university, had broader interests, carried a smaller teaching load, and was often more productive in terms of non-teaching activities such as writing and research.

After presenting these findings we asked our respondents if those who resisted innovations at their university might be similarly classified, in other words, did our prototypes seem to describe the resisters on their campus. Generally the responses from both faculty and administrators were confirmatory. However, there were some notable exceptions. As we would have predicted, some of our interviewees were very disturbed by these dichotomies. Generally, one of the first questions raised concerned the validity of generalizations across innovations. They were quick to point out that a faculty member who strongly resisted one particular innovation, like ITV, may himself be the innovator for another change. Again predictably, those of our interviewees who were themselves members of the humanistic disciplines, who perhaps perceived their own role to be that of a teacher rather than a researcher, challenged this whole assumption. The humanities are many centuries older than other academic areas, some pointed out, and its resources are to be found within the confines of the university itself; no purpose is served by going outside the system, all that is needed is contained within the library.

Generally, though this was by no means true in every case, administrators discussed the issues relating to personality and other characteristics of resisters more readily and openly than faculty members, particularly when the discussion turned to specific academic areas on their campus from which they expected the greatest amount of resistance to innovations. To a large extent this may have been the result of our procedure rather than a real difference between the openness of faculty members and administrators. Obviously the latter were freer to express their opinions and elaborate on the situation since the interview took place within the confines of their private offices with only the interviewer present. On the other hand, faculty members interviewed in groups were, we are sure, very much aware that what they were saying was not only being heard by the investigator but by their colleagues as well. Perhaps it is therefore even more significant that here too we obtained considerable confirmation of our hypotheses. One more important factor must be pointed out in this connection. While disciplines commonly included among the humanities were most frequently pointed to as sources of resistance, other areas were certainly not immune. Schools of education and even engineering were most resistant on some campuses.

We were repeatedly challenged on the question of determining the value of an innovation. Our interviewees pointed out that some, if not most, innovations are worthless (e.g. ITV). Is not a faculty member justified in resisting an innovation which he perceives to be of little or no use? At times we were accused of equating innovation with progress, implying that all innovations are good. If we agreed with them that not all innovations were equally valuable they pointed to the difficulty of judging which are and which are not. What objective criteria do we have for measuring the relative merit of an innovation, they would ask.

Security, it was generally felt by our interviewees, was another important variable in the behavior of a professor towards an innovation. Repeatedly there was agreement that the younger, less established, professor with the heavier teaching load and probably lower salary, was indeed more likely to resist innovations. One dean, an educator for over 25 years, put it: "In my earlier days, young prospective instructors used to come to the school asking for an opportunity to put to work new ideas in teaching. Their main concern was about freedom to institute new programs, new approaches. Today the young instructor, with the ink still wet on his doctor's degree, asks about security, tenure, retirement benefits and so on. Little is said about introducing new ideas and there seems to be a great concern for 'fitting-in'. Thus those innovations which are introduced are introduced by the older, more secure, faculty member."

That security is a powerful factor here is indicated in yet another way. In some cases even one who is generally innovative may become a resister when his own security is threatened. Security here does not always mean money or tenure, either -- sometimes it involves the defense of one's discipline. An interesting example of this was found at the school which had introduced the core humanities curriculum. The supra departmental nature of the program gave rise to strong resistance, not because the professor saw his job threatened, but because he feared the consequences of losing his departmental footing.

Many among those whom we interviewed felt that the cosmopolite-localite dimension was highly oversimplified. Surely, they asserted, people do not have to fall into one or the other camp. There must be a middle ground. We assured them that we thought there was, that people may fall at any point along a continuum. Many pointed out again that a person could be at different points of the continuum at different times, depending on the particular innovation, being sympathetic to one while resisting another. But even after all of these reservations were stated, they usually agreed that there was considerable validity in our hypotheses. Faculty members and administrators alike felt that the personality of the professor, his array of interests, his narrowness or breadth of scope, were indeed important areas for further research.

## Summary and suggested directions for future research

The information gathered in this phase of our investigation leaves us with little doubt about the possibility that our research case history findings are characteristic only of the Metro University faculty. In other words, we have found confirmation of most of our findings, even if only through these informal interviews. Many questions remain unanswered and will require careful empirical study. It is abundantly clear that many of our terms like innovation itself, cosmopolite, localite, etc., will require more operational definitions before we can proceed with further research.

Our interviews clearly pointed up the need for gathering more objective information about the faculty, together with additional subjective evaluations from their students. We need to find a large number of behavioral items which characterize the individuals at either end or somewhere along our continuum. What is their approach to the campus itself? It is quite reasonable to expect that, as was pointed out to us on some campuses, those who fall between the two extremes are of great importance. Our data do not justify, and we do not want to imply, that being extremely cosmopolite is necessarily good and being localite is bad, although some who have read our earlier results apparently felt that this was implied. Without further research it is hard to speculate, but perhaps we will find that a prototype who has attributes from both dimensions will turn out to be the ideal professor type.

These interviews again reminded us of the danger of including purely behavioral items in instruments designed to differentiate one group from another. We were told that while such overt behavioral items as participation in national meetings, professional travel in general, the extent of teaching experience at other institutions, and the number of professional journal subscriptions might give some indication of an individual's orientation, the psychological dimensions underlying such overt visible behavior might be of even greater importance. As suggested earlier, a journal subscriber is under no obligation to read the journals he receives, nor is the conference goer compelled to attend the sessions or to listen to the papers which are presented. Undoubtedly there is frequently a facade of mobility which is nothing more than doing things in a conventional way. We could come up with a whole series of items which might characterize a cosmopolite or localite individual and find that the overt behavioral items are not at all reliable indices. We need then an instrument which will measure the more intrinsic aspects of behavior. Thus we would want to find out not only whether a given group of professors go to conventions, but how many meetings they really attend, and - more importantly - what changes occur in their professional activities as a result of such attendance when they return to the campus. On the other hand, another group may be scored as localite on an item relating to travel, when in fact their desire to travel is hampered only by the limitations imposed by travel budgets. So while the factor analysis in our research case history, along with our Chi Square tests, indicates that these overt behavioral factors have some important meaning, we are led to conclude on the basis of these interviews that we must explore these variables with much greater subtlety by building whole clusters of extrinsic and intrinsic items which would contribute to a clearer picture.

Professional travel does seem to us to be a most important factor, particularly relating to the cosmopolite-localite hypotheses. The age of the jet plane, the increased number of national meetings, the availability and tremendous impact of communication facilities, certainly mean that the professor is no longer dependent only on the library to broaden his scope of knowledge. Through public media, by visits to other universities, by attendance at national and international conferences, the whole world becomes in a sense his library or his laboratory. What happens to the professor for whom opportunity for travel is provided by research grant or university budget? Does he, as a result of this exposure to the world, question methods and procedures at his own institution? Does he bring back new ideas which may represent the seeds for innovation on his campus?

In a sense, of course, this broadening of the horizons is in itself an innovation and while it is one which is nation- and world-wide, it nevertheless has direct effects on the university community. Along with innovations in data processing, data retrieval, communication, this increased mobility affects the institution regardless of the strength of its resistance. These innovations are in a class by themselves, for individuals and subgroups in our culture are not really free to accept or reject them. The whole university can resist instructional television but it cannot ignore the fact that students and professors alike watch and are influenced by open-circuit commercial television. Undoubtedly these broad cultural innovations forced upon the system have an effect upon the other, more voluntary, innovations within the university.

In discussions over the years with Marshall McLuhan, the senior author has particularly been interested in McLuhan's assertions concerning the restricting effects of operating in what he calls our "print culture". It is our feeling, as is also discussed in Understanding Media (McLuhan, 1964), that we are rapidly moving into a communication and transportation culture. Although society and the university may be slow in breaking away from the restrictions of our "print culture", we see it being inevitably surplanted by the new means of communicating. We don't understand nor even fully know the effects that this change will have, but there are strong indications that some areas such as physics, chemistry, and biology are already no longer primarily shared by a print culture in disseminating knowledge, but require a far broader range of experience. This would indicate that change does not affect all parts of an institution equally. We would certainly agree that there are many characteristics of an educational system which can change while others appear to remain fixed. Furthermore, it appears likely that change of the system does not have an equal impact on all of its members, making it quite possible for some members to remain unaffected by the change.

The reader may recall that our factor analysis, reported in Chapter V , showed that for some professors, ITV was in itself an isolated object of concern, while for others it was apparently one of several interrelated objects within the university climate, all of which they reacted to favorably or unfavorably. It is not surprising, therefore, that among the responses which we found in the nine universities, some respondents, while objecting to ITV, strongly emphasized that they were sympathetic to other changes. Perhaps one of the first questions we need to study is what do university professors perceive as innovation, recognizing that what may appear as an innovation to one professor is hardly considered such by another. Furthermore, a particular innovation may appear to threaten one member of the system, while such a threat is not perceived by another. So if one wishes to implement change, he must recognize the individual's immediate perception in terms of the context of the situation. As we discussed earlier, as a hypothesis this is similar to the relationship of perception to context as stated in adaptation level theory (Helson, 1947). It may be then that in the final analysis, successful diffusion of an innovation depends on the climate within a given university. Not only that, but since the so-called "climate of reception" can easily change over time at a given institution, it is not always possible to predict the future date of an innovation in terms of the present climate of a university.

One of the strongest single suggestions that emerges from the present report is that extremely far-sighted programs must be a vital part of any attempt to institute innovations within the university. We might propose that techniques of instrumental reinforcement, scheduled with carefully pre-planned precision as outlined in current models of reinforcement theory such as those outlined by Ferster and Skinner (1957), might well be projected over a period of several years from the time the innovation is first introduced into the system.

The reversion effect occurs most often where reinforcers are not programmed beyond certain minimum limits. Perhaps the first task is to empirically determine what the most effective reinforcers for the continuance of an innovation are. In universities, salary increments, promotions, and overt administrative approval as a form of status for the innovator are the most frequently used reinforcers. Are there others of a more subtle nature? If long-range commitment is not secured by programmed schedules of the appropriate and most effective reinforcement, then we can suspect that the innovation will be short-lived from the outset. In order for innovation to be more than the musical chairs we discussed earlier, and for genuine innovation to occur and become institutionalized, it might be necessary that long-term programming of continuing reinforcement must be an integral part of the innovation-receiving system. Accidental or trial and error support for innovations has resulted in occasional short-term adoption. It is unlikely, however, that significant change in a university - if indeed we wish it - will ever occur if the present system of diffusion continues.

The formidable number of questions which remain unanswered are ample evidence that our explorations of the problems related to innovation in higher education have been but a beginning. Conversely, the unresolved issues, the tentative hypotheses are, we feel, justification for our contention that this is indeed a fertile area of research in which the many tools available to the social psychologist can be of tremendous value. We would go a step further to say that the study of change processes in higher education including the study of the faculty personality are of paramount importance to the survival of our education system, in view of the challenge by modern technology coupled with the rapidly increasing enrolment.

We believe we have demonstrated some important approaches to the problem. We have examined in some detail the hypotheses concerning innovation in general, as found in Rogers (1962) and more specifically applied to education by Miles (1964) and others. Some of these formulations appeared to be extremely helpful in understanding the findings of our research case history. However, we also became aware of their limitations, particularly of the need for expanding the social psychological dimensions of these theoretical frameworks.

Because of the complex context of our investigation, both the general and specific findings reported in the preceding pages should be interpreted only as generators of hypotheses and not definite bases for conclusions. Thus, the authors look upon this study as having its greatest importance in the role it could play in stimulating further research in an area marked by a dearth of empirical studies.

Certainly the value of our report should not be measured in terms of the questions which we have answered, but the extent to which it will provoke further experimental testing of the many tentative hypotheses which we have presented. We do urge that other behavioral scientists should regard the academic community as a significant setting for research into the nature of change processes.

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## Appendix I

## Sample - Initial Questionnaire

## (Includes Final Frequency Count)

In order to respect the anonymity of the university and individual departments involved in the present investigation, any specific reference in the following tables to either will be deleted. The deletion will be noted with the following mark ☆

# FINAL FREQUENCY COUNT

APPROVED FOR DISTRIBUTION
☆
Dean of Faculties

To: ______________________________

You are being asked to complete the following test, which is one part of a research project supported by a government grant. For our results to have maximal validity and significance, it is extremely important that each person asked to participate cooperate with us by completing and returning the test. All individual answers and personal information will be kept in strict confidence, in accordance with the ethics of such research. Your name will not be revealed, nor will your answers be individually identified in the interpretation and reporting of results. For purposes of statistical comparison, however, we do need the personal information requested on pages 33 through 35. Answers to some of the questions on these pages have already been written in. Please be sure your rank and other information already filled in are correct.

Completion of this test will require approximately 30 minutes. Please take the test in sequence--do not look ahead, and do not turn back. Your cooperation in this matter is very important, since your taking the test in the indicated order is an important factor in the research design, and your failure to do this would affect the validity of your responses.

A return envelope, already addressed and marked "Personal," is enclosed. When you have completed the test, please place it in this envelope, seal the envelope, and return it to us via interoffice mail.

Please return the completed test to us by Friday, December 11, 1959.

Only your honest feelings about these issues are sought. There is really no way you are supposed to feel about these issues. It is expected that opinions of individual faculty members will differ widely.

We would be interested in having any comments you might wish to make about this test. You will find a page for comments at the end of the test.

Please do not merely toss this booklet aside, since only through your cooperation will the report of this study, which will be circulated nationally, be truly representative of our faculty.

Thank you.

n = 319

## Frontier Fiesta

No Response

good 36 : 65 : 68 : 51 : 31 : 31 : 22 bad 16

rough 17 : 43 : 57 : 133 : 28 : 19 : 2 smooth 20

honest 36 : 57 : 40 : 128 : 21 : 13 : 4 dishonest 20

passive 8 : 10 : 18 : 99 : 30 : 81 : 52 active 21

fair 18 : 49 : 39 : 140 : 26 : 19 : 7 unfair 21

weak 16 : 34 : 34 : 105 : 53 : 46 : 10 strong 21

fast 14 : 55 : 46 : 158 : 11 : 12 : 2 slow 21

unpleasant 13 : 19 : 22 : 59 : 58 : 97 : 30 pleasant 21

hard 19 : 26 : 36 : 200 : 8 : 5 : 4 soft 21

worthless 25 : 24 : 36 : 41 : 78 : 71 : 28 valuable 16

1.6-1.15

n = 319

Night Students

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 117 | 84 | 50 | 41 | 9 | 7 | 2 | bad | 9 |
| rough | 8 | 19 | 43 | 170 | 18 | 28 | 15 | smooth | 18 |
| honest | 70 | 100 | 30 | 93 | 8 | 3 | 0 | dishonest | 15 |
| passive | 2 | 11 | 26 | 80 | 48 | 89 | 47 | active | 16 |
| fair | 67 | 64 | 37 | 123 | 9 | 2 | 0 | unfair | 17 |
| weak | 5 | 12 | 34 | 82 | 44 | 92 | 36 | strong | 14 |
| fast | 13 | 31 | 57 | 138 | 43 | 16 | 5 | slow | 16 |
| unpleasant | 6 | 9 | 14 | 81 | 38 | 92 | 63 | pleasant | 16 |
| hard | 22 | 32 | 24 | 209 | 10 | 3 | 2 | soft | 17 |
| worthless | 1 | 0 | 5 | 47 | 28 | 88 | 136 | valuable | 14 |

1.16-1.25

n = 319

## Athletic Scholarships

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 24 | 60 | 80 | 33 | 24 | 36 | 49 | bad | 33 |
| rough | 15 | 13 | 37 | 197 | 22 | 7 | 7 | smooth | 21 |
| honest | 18 | 30 | 48 | 78 | 49 | 36 | 40 | dishonest | 20 |
| passive | 10 | 5 | 12 | 160 | 41 | 47 | 22 | active | 22 |
| fair | 20 | 46 | 56 | 66 | 38 | 30 | 43 | unfair | 20 |
| weak | 20 | 29 | 30 | 148 | 37 | 27 | 7 | strong | 21 |
| fast | 10 | 12 | 26 | 218 | 7 | 16 | 9 | slow | 21 |
| unpleasant | 26 | 21 | 35 | 136 | 48 | 25 | 8 | pleasant | 20 |
| hard | 13 | 17 | 31 | 205 | 13 | 6 | 12 | soft | 22 |
| worthless | 35 | 27 | 27 | 46 | 83 | 59 | 24 | valuable | 18 |

1.26-1.35

n = 318

## Additional Tuition Increase

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 10 | 22 | 33 | 30 | 36 | 55 | 121 | bad | 11 |
| rough | 59 | 48 | 30 | 156 | 5 | 2 | 0 | smooth | 18 |
| honest | 73 | 48 | 20 | 138 | 12 | 5 | 4 | dishonest | 18 |
| passive | 6 | 1 | 7 | 181 | 31 | 41 | 33 | active | 18 |
| fair | 46 | 49 | 32 | 64 | 29 | 37 | 43 | unfair | 18 |
| weak | 17 | 17 | 16 | 189 | 11 | 30 | 20 | strong | 18 |
| fast | 13 | 15 | 14 | 229 | 12 | 6 | 10 | slow | 19 |
| unpleasant | 99 | 80 | 47 | 62 | 10 | 1 | 2 | pleasant | 17 |
| hard | 47 | 51 | 28 | 172 | 1 | 0 | 1 | soft | 18 |
| worthless | 17 | 11 | 34 | 103 | 54 | 53 | 29 | valuable | 17 |

1.36-1.45

n = 319

Higher Entrance Requirements for University of ________ ☆

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 154 | 61 | 42 | 20 | 12 | 8 | 7 | bad | 15 |
| rough | 29 | 26 | 32 | 169 | 10 | 20 | 11 | smooth | 22 |
| honest | 104 | 51 | 23 | 110 | 5 | 4 | 0 | dishonest | 22 |
| passive | 1 | 1 | 6 | 138 | 31 | 51 | 69 | active | 22 |
| fair | 121 | 72 | 32 | 46 | 15 | 8 | 4 | unfair | 21 |
| weak | 3 | 4 | 6 | 109 | 28 | 53 | 94 | strong | 22 |
| fast | 25 | 23 | 16 | 216 | 5 | 9 | 2 | slow | 23 |
| unpleasant | 11 | 24 | 31 | 112 | 26 | 44 | 49 | pleasant | 22 |
| hard | 34 | 52 | 39 | 166 | 3 | 1 | 1 | soft | 23 |
| worthless | 5 | 7 | 6 | 34 | 30 | 72 | 144 | valuable | 21 |

1.46-1.55

n = 319

More Fringe Benefits, with Smaller Salary Increases

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 12 | 22 | 41 | 56 | 43 | 60 | 72 | bad | 13 |
| rough | 31 | 15 | 29 | 195 | 15 | 11 | 2 | smooth | 21 |
| honest | 25 | 26 | 26 | 176 | 16 | 15 | 14 | dishonest | 21 |
| passive | 13 | 7 | 22 | 183 | 23 | 27 | 23 | active | 21 |
| fair | 28 | 26 | 39 | 108 | 34 | 37 | 28 | unfair | 19 |
| weak | 21 | 24 | 36 | 168 | 23 | 16 | 10 | strong | 21 |
| fast | 3 | 9 | 11 | 237 | 19 | 9 | 10 | slow | 21 |
| unpleasant | 32 | 31 | 53 | 102 | 38 | 21 | 21 | pleasant | 21 |
| hard | 13 | 12 | 30 | 220 | 11 | 7 | 5 | soft | 21 |
| worthless | 24 | 22 | 42 | 99 | 61 | 35 | 17 | valuable | 19 |

1.56-1.65

n = 319

## Larger Salary Increases, with Fewer Additional Fringe Benefits

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 122 | 66 | 44 | 42 | 22 | 8 | 4 | bad | 11 |
| rough | 6 | 9 | 9 | 204 | 21 | 17 | 33 | smooth | 20 |
| honest | 77 | 41 | 24 | 149 | 5 | 2 | 1 | dishonest | 20 |
| passive | 2 | 6 | 5 | 166 | 34 | 40 | 46 | active | 20 |
| fair | 102 | 61 | 42 | 86 | 8 | 3 | 0 | unfair | 17 |
| weak | 3 | 5 | 5 | 154 | 30 | 43 | 59 | strong | 20 |
| fast | 26 | 17 | 21 | 219 | 5 | 8 | 3 | slow | 20 |
| unpleasant | 4 | 3 | 8 | 78 | 45 | 66 | 95 | pleasant | 20 |
| hard | 14 | 7 | 10 | 240 | 12 | 6 | 9 | soft | 21 |
| worthless | 2 | 2 | 11 | 55 | 45 | 88 | 99 | valuable | 17 |

1.66-1.75

n = 318

University of ☆ Becoming a State University

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 114 | 87 | 47 | 31 | 5 | 8 | 12 | bad | 14 |
| rough | 19 | 18 | 28 | 163 | 14 | 19 | 34 | smooth | 23 |
| honest | 94 | 43 | 35 | 117 | 2 | 3 | 3 | dishonest | 21 |
| passive | 6 | 7 | 6 | 131 | 28 | 55 | 65 | active | 20 |
| fair | 111 | 69 | 36 | 74 | 3 | 2 | 4 | unfair | 19 |
| weak | 5 | 8 | 14 | 120 | 25 | 55 | 70 | strong | 21 |
| fast | 43 | 28 | 24 | 183 | 8 | 6 | 5 | slow | 21 |
| unpleasant | 9 | 15 | 17 | 88 | 36 | 66 | 67 | pleasant | 20 |
| hard | 17 | 16 | 17 | 226 | 10 | 5 | 6 | soft | 21 |
| worthless | 3 | 4 | 3 | 45 | 36 | 103 | 105 | valuable | 19 |

1.76-1.80
2.6-2.10

n = 319

Admitting Qualified Negroes to University of ☆

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 79 | 59 | 48 | 61 | 17 | 6 | 32 | bad | 17 |
| rough | 50 | 39 | 32 | 151 | 11 | 5 | 10 | smooth | 21 |
| honest | 104 | 49 | 36 | 100 | 2 | 2 | 5 | dishonest | 21 |
| passive | 6 | 1 | 9 | 149 | 37 | 36 | 60 | active | 21 |
| fair | 121 | 61 | 39 | 62 | 6 | 3 | 7 | unfair | 20 |
| weak | 10 | 4 | 11 | 149 | 30 | 31 | 62 | strong | 22 |
| fast | 21 | 16 | 14 | 207 | 12 | 13 | 14 | slow | 22 |
| unpleasant | 42 | 22 | 54 | 97 | 33 | 29 | 22 | pleasant | 20 |
| hard | 37 | 21 | 28 | 205 | 3 | 3 | 1 | soft | 21 |
| worthless | 16 | 5 | 11 | 90 | 50 | 61 | 66 | valuable | 20 |

2.11-2.20

n = 319

## Emphasis on Research at University of ______ ☆

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 118 | 87 | 43 | 19 | 15 | 15 | 6 | bad | 16 |
| rough | 17 | 28 | 21 | 180 | 15 | 17 | 19 | smooth | 22 |
| honest | 74 | 53 | 31 | 122 | 7 | 8 | 3 | dishonest | 21 |
| passive | 6 | 6 | 9 | 107 | 40 | 58 | 73 | active | 20 |
| fair | 77 | 64 | 54 | 78 | 8 | 12 | 5 | unfair | 21 |
| weak | 9 | 10 | 12 | 94 | 38 | 61 | 74 | strong | 21 |
| fast | 30 | 27 | 31 | 184 | 10 | 10 | 6 | slow | 21 |
| unpleasant | 5 | 6 | 12 | 92 | 50 | 74 | 58 | pleasant | 22 |
| hard | 28 | 22 | 31 | 207 | 2 | 2 | 5 | soft | 22 |
| worthless | 2 | 5 | 8 | 32 | 35 | 89 | 129 | valuable | 19 |

2.21-2.30

n = 319

## Training in Teaching Methods for Professors

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 81 | 61 | 55 | 48 | 14 | 16 | 25 | bad | 19 |
| rough | 18 | 18 | 22 | 190 | 15 | 14 | 19 | smooth | 23 |
| honest | 55 | 39 | 48 | 136 | 4 | 7 | 7 | dishonest | 23 |
| passive | 12 | 7 | 10 | 143 | 38 | 41 | 45 | active | 23 |
| fair | 67 | 52 | 55 | 101 | 7 | 10 | 5 | unfair | 22 |
| weak | 20 | 19 | 15 | 117 | 33 | 37 | 56 | strong | 22 |
| fast | 25 | 14 | 22 | 205 | 13 | 9 | 8 | slow | 23 |
| unpleasant | 20 | 18 | 28 | 111 | 55 | 33 | 31 | pleasant | 23 |
| hard | 19 | 21 | 27 | 205 | 5 | 6 | 13 | soft | 23 |
| worthless | 18 | 14 | 17 | 42 | 62 | 55 | 91 | valuable | 20 |

2.31-2.40

n = 319

## Training in Teaching Methods for Prospective Professors

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 105 | 61 | 53 | 42 | 15 | 8 | 20 | bad | 15 |
| rough | 19 | 17 | 15 | 195 | 21 | 13 | 18 | smooth | 21 |
| honest | 67 | 33 | 45 | 136 | 5 | 4 | 8 | dishonest | 21 |
| passive | 12 | 2 | 13 | 141 | 33 | 39 | 56 | active | 23 |
| fair | 81 | 46 | 50 | 98 | 12 | 4 | 8 | unfair | 20 |
| weak | 16 | 10 | 16 | 129 | 38 | 33 | 58 | strong | 19 |
| fast | 28 | 12 | 21 | 211 | 10 | 7 | 9 | slow | 21 |
| unpleasant | 15 | 17 | 25 | 119 | 44 | 39 | 39 | pleasant | 21 |
| hard | 22 | 17 | 30 | 208 | 7 | 6 | 9 | soft | 20 |
| worthless | 19 | 8 | 12 | 38 | 64 | 64 | 96 | valuable | 18 |

2.41-2.50

n = 319

### Lecture Method Supplemented by Small Discussion Sections for Large Classes

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 106 | 98 | 56 | 27 | 5 | 5 | 8 | bad | 14 |
| rough | 13 | 15 | 31 | 166 | 33 | 25 | 16 | smooth | 20 |
| honest | 57 | 57 | 47 | 131 | 3 | 1 | 3 | dishonest | 20 |
| passive | 6 | 2 | 9 | 123 | 52 | 62 | 46 | active | 19 |
| fair | 81 | 73 | 49 | 83 | 5 | 6 | 2 | unfair | 20 |
| weak | 7 | 11 | 14 | 112 | 43 | 61 | 53 | strong | 18 |
| fast | 23 | 29 | 27 | 194 | 14 | 6 | 6 | slow | 20 |
| unpleasant | 7 | 3 | 13 | 93 | 61 | 74 | 49 | pleasant | 19 |
| hard | 21 | 21 | 34 | 207 | 5 | 6 | 4 | soft | 21 |
| worthless | 5 | 3 | 4 | 36 | 67 | 93 | 93 | valuable | 18 |

2.51-2.60

n = 319

## Straight Lecture Method for Large Classes

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 22 | 47 | 46 | 45 | 58 | 44 | 44 | bad | 13 |
| rough | 27 | 29 | 43 | 162 | 21 | 15 | 3 | smooth | 19 |
| honest | 22 | 37 | 38 | 151 | 26 | 18 | 8 | dishonest | 19 |
| passive | 23 | 23 | 46 | 150 | 28 | 23 | 7 | active | 19 |
| fair | 16 | 41 | 43 | 95 | 53 | 32 | 21 | unfair | 18 |
| weak | 27 | 37 | 69 | 119 | 29 | 18 | 4 | strong | 16 |
| fast | 9 | 20 | 32 | 185 | 25 | 18 | 11 | slow | 19 |
| unpleasant | 16 | 29 | 43 | 135 | 45 | 26 | 7 | pleasant | 18 |
| hard | 14 | 21 | 44 | 196 | 14 | 6 | 5 | soft | 19 |
| worthless | 6 | 23 | 59 | 82 | 75 | 44 | 13 | valuable | 17 |

2.61-2.70

n = 319

## Television Instruction in Introductory Courses

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 25 | 39 | 68 | 69 | 24 | 27 | 53 | bad | 14 |
| rough | 33 | 22 | 35 | 174 | 16 | 13 | 7 | smooth | 19 |
| honest | 26 | 29 | 47 | 145 | 17 | 17 | 19 | dishonest | 19 |
| passive | 26 | 21 | 30 | 143 | 42 | 23 | 16 | active | 18 |
| fair | 20 | 33 | 49 | 118 | 27 | 21 | 32 | unfair | 19 |
| weak | 35 | 31 | 44 | 112 | 46 | 20 | 12 | strong | 19 |
| fast | 15 | 16 | 33 | 181 | 25 | 11 | 19 | slow | 19 |
| unpleasant | 28 | 13 | 33 | 136 | 53 | 24 | 13 | pleasant | 19 |
| hard | 14 | 22 | 38 | 191 | 13 | 13 | 8 | soft | 20 |
| worthless | 32 | 18 | 27 | 77 | 88 | 43 | 17 | valuable | 17 |

2.71-2.80

n = 319

Straight Television Instruction for Large Classes

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 10 | 13 | 40 | 52 | 55 | 49 | 85 | bad | 13 |
| rough | 45 | 21 | 42 | 166 | 16 | 8 | 2 | smooth | 19 |
| honest | 20 | 14 | 26 | 157 | 24 | 29 | 30 | dishonest | 19 |
| passive | 32 | 32 | 44 | 150 | 27 | 8 | 7 | active | 19 |
| fair | 14 | 16 | 30 | 105 | 53 | 38 | 45 | unfair | 18 |
| weak | 44 | 43 | 68 | 114 | 14 | 13 | 4 | strong | 19 |
| fast | 12 | 20 | 25 | 184 | 20 | 16 | 23 | slow | 19 |
| unpleasant | 35 | 29 | 53 | 127 | 31 | 19 | 6 | pleasant | 19 |
| hard | 16 | 25 | 34 | 187 | 18 | 9 | 11 | soft | 19 |
| worthless | 34 | 39 | 65 | 73 | 62 | 19 | 9 | valuable | 18 |

3.6-3.15

n = 319

Honors Courses Consisting Only of Textbooks and Final Examinations

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 29 | 50 | 46 | 48 | 45 | 39 | 46 | bad | 18 |
| rough | 26 | 37 | 45 | 164 | 10 | 10 | 4 | smooth | 23 |
| honest | 30 | 33 | 37 | 135 | 27 | 22 | 13 | dishonest | 22 |
| passive | 23 | 16 | 32 | 137 | 46 | 25 | 18 | active | 22 |
| fair | 31 | 48 | 36 | 98 | 38 | 23 | 23 | unfair | 22 |
| weak | 29 | 31 | 56 | 104 | 24 | 37 | 17 | strong | 21 |
| fast | 18 | 26 | 22 | 193 | 21 | 4 | 13 | slow | 22 |
| unpleasant | 14 | 11 | 33 | 143 | 36 | 40 | 20 | pleasant | 22 |
| hard | 23 | 35 | 31 | 177 | 12 | 11 | 7 | soft | 23 |
| worthless | 20 | 20 | 42 | 72 | 67 | 47 | 30 | valuable | 21 |

3.16-3.25

n = 319

## Correspondence Courses

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 14 | 30 | 67 | 45 | 41 | 46 | 60 | bad | 16 |
| rough | 31 | 26 | 40 | 181 | 11 | 5 | 4 | smooth | 21 |
| honest | 17 | 27 | 35 | 140 | 34 | 24 | 22 | dishonest | 20 |
| passive | 26 | 21 | 32 | 161 | 33 | 18 | 9 | active | 19 |
| fair | 16 | 33 | 54 | 121 | 30 | 21 | 25 | unfair | 19 |
| weak | 50 | 42 | 67 | 107 | 17 | 13 | 3 | strong | 20 |
| fast | 6 | 10 | 20 | 190 | 27 | 22 | 24 | slow | 20 |
| unpleasant | 27 | 22 | 41 | 149 | 39 | 17 | 4 | pleasant | 20 |
| hard | 14 | 13 | 30 | 186 | 25 | 13 | 16 | soft | 22 |
| worthless | 25 | 41 | 46 | 62 | 86 | 31 | 10 | valuable | 18 |

3.26-3.35

n = 319

## Television Instruction Supplemented by Small Discussion Sections for Large Classes

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 51 | 66 | 96 | 37 | 26 | 11 | 19 | bad | 13 |
| rough | 13 | 22 | 34 | 166 | 33 | 22 | 10 | smooth | 19 |
| honest | 33 | 56 | 53 | 132 | 12 | 6 | 8 | dishonest | 19 |
| passive | 9 | 7 | 28 | 135 | 62 | 36 | 23 | active | 19 |
| fair | 37 | 60 | 77 | 88 | 18 | 10 | 10 | unfair | 19 |
| weak | 18 | 12 | 47 | 104 | 59 | 40 | 21 | strong | 18 |
| fast | 11 | 30 | 43 | 178 | 22 | 8 | 8 | slow | 19 |
| unpleasant | 11 | 12 | 36 | 112 | 70 | 39 | 20 | pleasant | 19 |
| hard | 11 | 22 | 46 | 195 | 16 | 6 | 4 | soft | 19 |
| worthless | 11 | 10 | 32 | 50 | 93 | 67 | 38 | valuable | 18 |

3.36-3.45

n = 319

Television Instruction in Advanced Courses

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 8 | 29 | 41 | 44 | 43 | 47 | 93 | bad | 14 |
| rough | 39 | 35 | 35 | 170 | 10 | 10 | 2 | smooth | 18 |
| honest | 19 | 26 | 37 | 147 | 25 | 16 | 31 | dishonest | 18 |
| passive | 37 | 20 | 38 | 152 | 25 | 22 | 7 | active | 18 |
| fair | 17 | 22 | 40 | 111 | 39 | 26 | 46 | unfair | 18 |
| weak | 59 | 37 | 59 | 102 | 25 | 16 | 5 | strong | 16 |
| fast | 10 | 19 | 26 | 189 | 19 | 17 | 21 | slow | 18 |
| unpleasant | 38 | 30 | 44 | 118 | 42 | 20 | 9 | pleasant | 18 |
| hard | 18 | 21 | 34 | 190 | 15 | 10 | 13 | soft | 18 |
| worthless | 54 | 30 | 56 | 72 | 56 | 26 | 9 | valuable | 16 |

3.46-3.55

n = 319

## Answering Students' Questions in Large Classes

|  |  |  |  |  |  |  |  |  | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 59 | 79 | 74 | 32 | 29 | 25 | 8 | bad | 13 |
| rough | 31 | 31 | 50 | 160 | 15 | 12 | 13 | smooth | 17 |
| honest | 60 | 54 | 57 | 111 | 10 | 7 | 2 | dishonest | 18 |
| passive | 2 | 8 | 15 | 131 | 68 | 41 | 36 | active | 18 |
| fair | 68 | 57 | 76 | 63 | 19 | 15 | 4 | unfair | 17 |
| weak | 3 | 14 | 39 | 125 | 44 | 44 | 32 | strong | 18 |
| fast | 8 | 8 | 15 | 158 | 49 | 37 | 26 | slow | 18 |
| unpleasant | 12 | 14 | 41 | 105 | 62 | 40 | 27 | pleasant | 18 |
| hard | 25 | 28 | 53 | 185 | 6 | 2 | 1 | soft | 19 |
| worthless | 3 | 13 | 18 | 43 | 92 | 83 | 50 | valuable | 17 |

3.56-3.65

n = 319

## Teaching Machines

|  |  |  |  |  |  |  |  |  | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 15 | 38 | 58 | 108 | 17 | 20 | 42 | bad | 21 |
| rough | 19 | 10 | 22 | 198 | 21 | 15 | 7 | smooth | 27 |
| honest | 23 | 27 | 35 | 156 | 17 | 9 | 25 | dishonest | 27 |
| passive | 27 | 16 | 16 | 168 | 30 | 18 | 17 | active | 27 |
| fair | 17 | 28 | 37 | 147 | 23 | 21 | 19 | unfair | 27 |
| weak | 31 | 18 | 32 | 156 | 28 | 15 | 12 | strong | 27 |
| fast | 20 | 26 | 25 | 184 | 12 | 14 | 11 | slow | 27 |
| unpleasant | 26 | 17 | 24 | 157 | 32 | 21 | 15 | pleasant | 27 |
| hard | 8 | 14 | 14 | 219 | 12 | 15 | 10 | soft | 27 |
| worthless | 22 | 16 | 28 | 117 | 64 | 29 | 18 | valuable | 25 |

3.66-3.75

n = 318

## Myself as a Professor

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 49 | 129 | 74 | 39 | 7 | 0 | 1 | bad | 19 |
| rough | 11 | 23 | 46 | 130 | 45 | 28 | 15 | smooth | 20 |
| honest | 149 | 77 | 24 | 46 | 2 | 0 | 1 | dishonest | 19 |
| passive | 2 | 1 | 3 | 59 | 38 | 99 | 97 | active | 19 |
| fair | 145 | 88 | 23 | 39 | 2 | 2 | 1 | unfair | 18 |
| weak | 4 | 0 | 10 | 66 | 61 | 104 | 53 | strong | 20 |
| fast | 29 | 59 | 54 | 130 | 21 | 2 | 3 | slow | 20 |
| unpleasant | 2 | 0 | 6 | 62 | 65 | 85 | 79 | pleasant | 19 |
| hard | 19 | 72 | 67 | 116 | 18 | 3 | 1 | soft | 22 |
| worthless | 1 | 0 | 1 | 47 | 49 | 122 | 80 | valuable | 18 |

3.76-3.80
4.6-4.10

n = 319

## Myself Doing Publishable Research

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 58 | 76 | 78 | 56 | 17 | 6 | 13 | bad | 15 |
| rough | 16 | 34 | 31 | 160 | 27 | 22 | 10 | smooth | 19 |
| honest | 110 | 56 | 33 | 100 | 0 | 0 | 0 | dishonest | 20 |
| passive | 5 | 6 | 11 | 104 | 59 | 59 | 57 | active | 18 |
| fair | 78 | 54 | 40 | 121 | 5 | 2 | 1 | unfair | 18 |
| weak | 7 | 9 | 21 | 98 | 64 | 68 | 33 | strong | 19 |
| fast | 13 | 27 | 38 | 129 | 48 | 31 | 13 | slow | 20 |
| unpleasant | 9 | 6 | 24 | 89 | 52 | 59 | 62 | pleasant | 18 |
| hard | 30 | 37 | 47 | 173 | 6 | 2 | 4 | soft | 20 |
| worthless | 7 | 2 | 9 | 62 | 84 | 79 | 58 | valuable | 18 |

4.71-4.80

From the list below check all of the teaching methods which you personally use or would like to use in large-enrollment introductory courses.

5.6 Class demonstrations 246

5.7 Classroom lectures 296

5.8 Field trips 127

5.9 Guest instructors 180

5.10 Motion pictures 216

5.11 Outside work or readings in addition to textbook 270

5.12 Private tutorial sessions 118

5.13 Slides 174

5.14 Socratic method 101

5.15 Supplementary small discussion sections 197

5.16 Supplementary viewing (occasionally) of television 131

5.17 Teaching machines 64

5.18 Television lectures 78

5.19 Use of blackboard 287

5.20-5.21 How many check marks did you make on this page? Mean = 7.80

n = 319

Myself Conducting an Introductory Course

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 90 | 117 | 38 | 40 | 7 | 5 | 4 | bad | 18 |
| rough | 10 | 23 | 25 | 133 | 23 | 53 | 31 | smooth | 21 |
| honest | 128 | 61 | 22 | 84 | 2 | 1 | 0 | dishonest | 21 |
| passive | 1 | 2 | 2 | 84 | 30 | 91 | 88 | active | 21 |
| fair | 134 | 75 | 26 | 61 | 4 | 0 | 0 | unfair | 19 |
| weak | 2 | 4 | 4 | 72 | 48 | 106 | 62 | strong | 21 |
| fast | 30 | 57 | 55 | 132 | 19 | 5 | 0 | slow | 21 |
| unpleasant | 4 | 3 | 13 | 61 | 46 | 94 | 77 | pleasant | 21 |
| hard | 23 | 56 | 49 | 150 | 13 | 4 | 1 | soft | 23 |
| worthless | 0 | 0 | 5 | 53 | 56 | 109 | 75 | valuable | 21 |

4.51-4.60

n = 319

## Myself Conducting an Advanced Course

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 92 | 113 | 44 | 42 | 8 | 2 | 2 | bad | 16 |
| rough | 8 | 21 | 29 | 130 | 31 | 49 | 30 | smooth | 21 |
| honest | 132 | 57 | 22 | 87 | 1 | 0 | 0 | dishonest | 20 |
| passive | 1 | 2 | 3 | 88 | 39 | 71 | 95 | active | 20 |
| fair | 128 | 75 | 28 | 68 | 0 | 1 | 0 | unfair | 19 |
| weak | 2 | 2 | 12 | 70 | 57 | 91 | 66 | strong | 19 |
| fast | 39 | 53 | 43 | 144 | 14 | 6 | 0 | slow | 20 |
| unpleasant | 1 | 1 | 4 | 68 | 38 | 83 | 105 | pleasant | 19 |
| hard | 27 | 60 | 42 | 157 | 7 | 5 | 1 | soft | 20 |
| worthless | 0 | 0 | 2 | 55 | 49 | 109 | 84 | valuable | 20 |

4.61-4.70

n = 319

## Myself Conducting a Large Class

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 45 | 107 | 68 | 50 | 13 | 14 | 2 | bad | 20 |
| rough | 8 | 20 | 47 | 135 | 31 | 39 | 16 | smooth | 23 |
| honest | 102 | 69 | 30 | 92 | 3 | 1 | 0 | dishonest | 22 |
| passive | 1 | 5 | 5 | 88 | 44 | 85 | 69 | active | 22 |
| fair | 103 | 67 | 41 | 76 | 8 | 4 | 0 | unfair | 20 |
| weak | 3 | 3 | 28 | 80 | 61 | 83 | 38 | strong | 23 |
| fast | 26 | 49 | 56 | 134 | 23 | 8 | 0 | slow | 23 |
| unpleasant | 6 | 8 | 26 | 64 | 63 | 82 | 47 | pleasant | 23 |
| hard | 27 | 50 | 61 | 142 | 11 | 4 | 0 | soft | 24 |
| worthless | 1 | 2 | 12 | 57 | 81 | 102 | 41 | valuable | 23 |

4.31-4.40

n = 319

Myself Conducting a Small Class

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 125 | 111 | 34 | 30 | 1 | 2 | 0 | bad | 16 |
| rough | 11 | 13 | 19 | 116 | 29 | 60 | 49 | smooth | 22 |
| honest | 146 | 66 | 19 | 67 | 1 | 0 | 0 | dishonest | 20 |
| passive | 1 | 0 | 5 | 74 | 30 | 76 | 113 | active | 20 |
| fair | 148 | 75 | 20 | 56 | 1 | 0 | 0 | unfair | 19 |
| weak | 1 | 0 | 0 | 66 | 37 | 110 | 85 | strong | 20 |
| fast | 54 | 61 | 46 | 128 | 5 | 5 | 0 | slow | 20 |
| unpleasant | 1 | 1 | 5 | 40 | 33 | 96 | 124 | pleasant | 19 |
| hard | 26 | 54 | 35 | 156 | 14 | 7 | 6 | soft | 21 |
| worthless | 0 | 0 | 1 | 45 | 39 | 107 | 107 | valuable | 20 |

4.41-4.50

n = 319

## Myself Conducting a Lecture Course

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 54 | 120 | 61 | 48 | 8 | 6 | 2 | bad | 20 |
| rough | 4 | 19 | 39 | 125 | 35 | 55 | 20 | smooth | 22 |
| honest | 122 | 77 | 23 | 71 | 3 | 1 | 0 | dishonest | 22 |
| passive | 3 | 1 | 8 | 73 | 45 | 91 | 76 | active | 22 |
| fair | 119 | 85 | 27 | 62 | 3 | 2 | 0 | unfair | 21 |
| weak | 2 | 2 | 17 | 68 | 64 | 102 | 41 | strong | 23 |
| fast | 26 | 58 | 53 | 134 | 20 | 4 | 1 | slow | 23 |
| unpleasant | 2 | 5 | 8 | 64 | 54 | 103 | 60 | pleasant | 23 |
| hard | 20 | 55 | 51 | 149 | 12 | 6 | 3 | soft | 23 |
| worthless | 0 | 1 | 3 | 54 | 65 | 125 | 49 | valuable | 22 |

4.11-4.20

n = 319

Myself Conducting a Television Course

| | | | | | | | | | No Response |
|---|---|---|---|---|---|---|---|---|---|
| good | 14 | 42 | 52 | 99 | 26 | 22 | 46 | bad | 16 |
| rough | 33 | 17 | 39 | 161 | 19 | 20 | 9 | smooth | 21 |
| honest | 68 | 33 | 24 | 153 | 4 | 3 | 13 | dishonest | 21 |
| passive | 13 | 6 | 11 | 148 | 38 | 43 | 41 | active | 19 |
| fair | 54 | 41 | 33 | 147 | 8 | 5 | 12 | unfair | 19 |
| weak | 24 | 12 | 32 | 139 | 30 | 46 | 15 | strong | 21 |
| fast | 14 | 28 | 32 | 183 | 17 | 9 | 15 | slow | 21 |
| unpleasant | 29 | 10 | 22 | 116 | 40 | 55 | 27 | pleasant | 20 |
| hard | 23 | 25 | 43 | 192 | 7 | 4 | 5 | soft | 20 |
| worthless | 16 | 19 | 20 | 116 | 69 | 44 | 15 | valuable | 20 |

4.21-4.30

From the list below check the criteria which you use in evaluating your students in a large-enrollment introductory course.

5.22 Attendance 169

5.23 Attitude 169

5.24 Class recitation 139

5.25 English usage 158

5.26 Essay tests 170

5.27 Neatness 119

5.28 Objective tests 239

5.29 Oral examinations 60

5.30 Promptness in completing assignments 209

5.31 Spelling 154

5.32 Tardiness 81

5.33 Themes or term papers 155

5.34 Extra work to raise grades 70

5.35 Showing improvement 207

5.36-5.37 What is your age? _____ Mean = 41.83 Range 24 - 75

5.38 What is your sex? Male 256 Female 63

5.39-5.40 How many dependents do you have? _____ Mean = 2.75 Range = 0 - 9

5.41 What is your highest, earned, academic degree?

Baccalaureate 32 Master's 122 Ed.D. 21

Ph.D. 111 Doctorate other than Ed.D. or Ph.D. 5

5.42-5.43 At how many institutions (including all educational levels) have you taught? _____ Mean = 3.06 Range 1 - 10 plus

5.44-5.45 How many years of full-time teaching experience do you have? _____ Mean = 13.20 Range 0 - 52

5.46-5.47 What is your professional field?

01 ARC 4
02 ANT 2
03 ART 3
04 BIO 10
05 CHM 12
06 DPC 0
07 DRA 3
08 ENG 23
10 FRE 2
11 GEO 5

12 GER 3
13 GRA 1
14 GRK 0
15 HEB 0
16 HIS 15
18 HEC 6
19 ITA 0
20 JOU 3
21 LAT 0
22 MTH 18

23 MS 6
24 MUS 11
28 PHI 4
29 PHY 6
30 POL 9
31 PSY 14
32 RAD 12
33 REL 0
34 RUS 0
35 SOC 1

36 SPA 3

37 SPC 2

40 ACC 8

41 ADV 2

42 AEC 1

44 ECO 6

45 FIN 1

46 GBA 9

47 INS 0

48 MGT 4

49 MKT 1

50 PAD 0

51 RE 0

52 RET 0

53 SEC 5

54 TRA 1

60 AED 2

61 ARE 0

62 BED 1

63 EED 4

64 FED 2

65 HPE 8

66 IED 1

67 MUE 1

68 SED 4

69 SPE 1

70 CHE 6

71 CE 7

72 EE 6

73 EMR 2

74 IE 4

75 ME 3

76 PET 0

77 LAW 6

78 OPT 3

79 PHA 5

80 AIR 1

81 ABP 0

82 AUT 4

83 UT 0

84 CIV 0

85 DSL 1

86 DFT 1

87 ELE 4

88 ELC 3

89 ENG 0

90 FU 0

91 IMG 0

92 ISC 1

93 MCH 0

94 MEC 1

95 RAD 4

96 REF 0

97 TMT 0

98 WLD 1

99 LIB 16

5.48 Have you published in professional journals in your own field? Yes 164 No 142 No Response 13

5.49-5.50 If yes, how many papers have you published? ______
Mean = 6.29 Range 1 - 78

5.51 Have you ever read a paper at a professional meeting?

Yes 170 No 136 No Response 13

5.52-5.53 If yes, how many papers have you read? ______

Mean = 5.14 Range 1 - 30 plus

5.54-5.55 What is your teaching load in semester hours? ______

Mean = 10.55 Range 1 - 20 plus

5.56-5.57 If you were teaching an introductory course in your field, approximately what size class would you prefer? ______

Mean = 32.14 Range "less than 10" - "over 99"

5.58-5.59 Approximately how many full-time faculty members are there in your department? ______

5.60 What is your academic rank?

Professor 74 Associate Professor 101

Assistant Professor 85 Instructor 57

## Appendix 2

## Sample - Pretest Interview

## (Includes Final Frequency Count)

In order to respect the anonymity of the university and individual departments involved in the present investigation, any specific reference in the following tables to either will be deleted. The deletion will be noted with the following mark ☆

## INTERVIEW SCHEDULE

## PSYCHOLOGY RESEARCH PROJECT NO. 13

Instructions to Interviewer

In contacting the interviewee, efforts in establishing rapport may be more successful if, in your initial call to the prospective interviewee, you reflect the following idea:

> "We notice that you were kind enough to cooperate with us on our psychology research project by filling out the questionnaire that was sent to you through the mail recently. If it would be possible, I would like to get your impressions in more detail on certain aspects of teaching. When would you have a free hour during which we could get together? Let me emphasize again that, consistent with the ethics of such research, we will not in any way reveal your individual responses to the things we will be discussing."

Another suggestion: Please record responses as fully as possible and write as legibly as possible.

NAME OF RESPONDENT FREQUENCY COUNT

CODE NO.__________ DEPARTMENT__________

OFFICE EXTENSION__________ HOME PHONE__________

| Interviewers | Code Numbers | |
|---|---|---|
| Dr. Daniel E. Sheer | 1 | ________ |
| Dr. Samuel R. Pinneau | 2 | ________ |
| Dr. Laurence S. McGaughran | 3 | ________ |

Interview Schedule
Psychology Research Project No. 13

1. I believe that you completed the questionnaire which we recently sent you. Isn't that right?

2. (If answer is "Yes") What are some of the things about it which you liked most, if any?

(1)

(2)

(3)

(4)

(5)

(6)

(7)

(8)

(9)

(10)

n = 120

| Liked | | |
|---|---|---|
| 21 | - | Easy to answer; clear and easily understood |
| 19 | - | Questionnaire comprehensive |
| 14 | - | Enjoy giving opinions |
| 10 | - | Worthwhile attempt at scientific knowledge |
| 11 | - | Miscellaneous |

Interview Schedule
Psychology Research Project No. 13

3. What are some of the things about it which you ~~liked~~ disliked most, if any?

(1)

(2)

(3)

(4)

(5)

(6)

(7)

(8)

(9)

(10)

n = 120

| Disliked | | |
|---|---|---|
| 84 | - | Questionnaire ambiguous, confusing, unclear |
| 29 | - | Lack of clarity of purpose |
| 18 | - | Took too much time |
| 17 | - | Limits and prejudices answers |
| 11 | - | Questionnaire and issues irrelevant |
| 10 | - | General disapproval and opposition to questionnaire |
| 6 | - | Responses fluctuate, not reliable |

4. As you know, there has been a lot of controversy recently concerning content versus method in teaching. For example, universities virtually never require prospective professors to obtain training in teaching methods. How do you feel about this practice?

Questions 4 and 5 are combined and the answers categorized as follows: n = 120

48 - Content sufficient

32 - Content important but method important too

13 - Both method and content of equal importance

9 - Education courses not helpful, but some methods needed

7 - Method most important

6 - Low incident answers

5 - Depends on level of teaching: high school, college, or graduate

5. (After respondent has stated his position, probe.) Why?

6. How do you feel about the plan to control the effects of the large population increase on college enrollments which involves drastically up-grading the entrance requirements for students?

FAVOR

n = 120

18 - Pick those who are able

15 - Keep up standards of quality education

14 - Prevent waste on poor students

8 - Get better performance and graduates

8 - Best students may use the limited facilities

5 - Better students are stimulating to teachers

24 - Miscellaneous

7. (After respondent has stated his position, probe.) Why?

AGAINST

22 - Upgrading is undemocratic

13 - Lose the false postives

13 - Should let students in, then prune

8 - Students might perform poorly because of poor high school background

13 - Miscellaneous

NO OPINION

16 - Upgrading should be left to the particular school

6 - Upgrading should be carried on regardless of enrollment demands

4 - Both sides are seen

5 - Miscellaneous

8. Have you heard much about teaching machines?

ow and why - feel as you do about teaching machines. (Over-all rating of questions 9 - 12)

Favor 29 Against 67 No Opinion 24

(If respondent states "No," begin...) Well, in brief terms...

(If respondent states "Yes," begin...) As you know...

(Continue for both groups...) These devices present a series of problems or questions to the student, and after he has attempted to answer them, they provide the correct answer automatically. The student proceeds at his own rate. Later material cannot be understood without learning the earlier material. The machines are usually built in such a way as to provide a permanent record of the student's work.

9. As you can imagine, some professors are opposed to teaching machines; others are in favor of them. Imagine yourself for a moment as an individual who is strongly opposed to the use of teaching machines. Now state as many different reasons as you can for your opposition to their use.

(1)

(2)

(3)

(4)

(5)

Questions 9 through 12 are combined and the answers categorized as follows:

n = 120

FAVOR

| | |
|---|---|
| 57 - | Reach more students, solve teacher shortage |
| 48 - | Teaching machines good for drill and practice |
| 30 - | Machine is more effective |
| 25 - | Standardize teaching, is dependable |
| 19 - | Cheaper |
| 16 - | Student learns at his own rate |
| 10 - | Provides cumulative record of progress |
| 10 - | Motivates student |
| 54 - | Miscellaneous favor |

AGAINST

(6)

85 - Machine is too impersonal, no discussion

31 - Machine can handle only facts, is uncreative

(7)

27 - Machine won't motivate student

24 - Machine is limited - other reasons unclear

(8) 14 - Machine is inflexible, not up to date

13 - Machine will cause unemployment of teachers

(9) 12 - Not possible to use machine in my subject

10 - Too expensive

10 - Machine can't handle individual problems

(10)

64 - Miscellaneous against

10. Now imagine yourself for a moment as an individual who strongly supports the use of teaching machines. State as many different reasons as you can for your support of their use.

(1)

(2)

(3)

(4)

(5)

(See Page 5)

(6)

(7)

(8)

(9)

(10)

11. How do you personally feel about teaching machines?

(See Page 5)

12. (Probe) Why?

13. As you know, some professors are strongly opposed to teaching by television; others are in favor of it. Imagine yourself for a moment as an individual who is strongly opposed to teaching by television. Now state as many different reasons as you can for your opposition to television instruction.

(1)

Questions 13 and 14 are combined.

Combined overview rating on questions 13 and 14: (n = 119)

(2)

Favor 47

Against 60

(3)

No Opinion 12

FAVOR (n = 120)

(4)

| | | |
|---|---|---|
| 72 | - | TV reaches more students |
| 61 | - | TV is useful as a supplement |
| 42 | - | TV is economical, effective and efficient |
| 36 | - | Outstanding lectures available to all |
| 29 | - | TV raises the standard of teaching |
| 16 | - | TV eases the teacher load, gives time for research |
| 15 | - | TV lectures can be reused |
| 7 | - | TV may be viewed at home, with fewer distractions |
| 45 | - | Miscellaneous favor |

(5)

(6)

(7)

(8)

(9)

(10)

Interview Schedule
Psychology Research Project No. 13

14. Now imagine yourself for a moment as an individual who is strongly in favor of teaching by television. State as many different reasons as you can for your support of television instruction.

(1)
(2)
(3)
(4)
(5)
(6)
(7)
(8)
(9)
(10)

AGAINST

n = 120

| | | |
|---|---|---|
| 103 | - | Lack of personal contact |
| 21 | - | Too many distractions at home, lack of intellectual atmosphere |
| 20 | - | Against TV because of fear of new things and/or unemployment |
| 19 | - | It is more difficult to teach on TV |
| 15 | - | No motivation with TV |
| 12 | - | Can't teach laboratory courses or workshops on TV |
| 12 | - | TV limited because of misinterpretation of viewpoints |
| 5 | - | TV lowers level of instruction |
| 68 | - | Miscellaneous against TV |

15. How do you personally feel about television instruction?

For questions #15 and 16, 48 response categories with their frequency counts are listed in Appendix 4.

16. (Probe) Why?

17. What great people, living or dead, do you admire most?

(1)

(2)

(3)

(4)

(5)

(6)

(7)

(8)

(9)

(10)

n = 120

This three-point scale was derived from a five-point scale by two raters.

See explanation in Procedure Section of main report.

| | | Authoritarianism |
|---|---|---|
| 1 | 59 | High |
| 2 | 35 | Medium |
| 3 | 24 | Low |

18. We get a feeling of awe when something seems to us wonderful, or impressive, or really important. What things would give you the greatest feeling of awe?

n = 120

What gives you feelings of awe?

Ranked from 1 (high) to 5 (low) and converted to a three-point scale by two raters:

| | | Authoritarianism |
|---|---|---|
| 1 | 47 | High |
| 2 | 47 | Medium |
| 3 | 24 | Low |

Evaluation of attitudes through interviews on 1 to 9 scale:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Secure | 1. | 0 | Tolerant | 1. | 1 | Sophisticated | 1. | 0 |
| | 2. | 3 | | 2. | 7 | | 2. | 3 |
| | 3. | 17 | | 3. | 12 | | 3. | 10 |
| | 4. | 25 | | 4. | 18 | | 4. | 25 |
| | 5. | 17 | | 5. | 17 | | 5. | 27 |
| | 6. | 30 | | 6. | 27 | | 6. | 30 |
| | 7. | 16 | | 7. | 24 | | 7. | 19 |
| | 8. | 7 | | 8. | 8 | | 8. | 5 |
| Evasive, tense | 9. | 5 | Hostile, Negative | 9. | 6 | Bland, Mediocre | 9. | 1 |

19. If you were the president of a university and Charles Van Doren applied for a position as a faculty member, would you hire him?

Yes 43 No 51 No Opinion 25

FAVOR (n = 120)

48 - Good instructor, take advantage of this

33 - Van Doren corrected his mistake, give him another chance

17 - Everyone would have done the same thing

16 - Was victim of circumstances
16 - No moral issue is involved; it was done off campus
2 - If he has qualifications, hire him in a non-teaching position

13 - Miscellaneous favor

20. (After respondent has stated his position, probe.) Why?

AGAINST (n = 119)

40 - Van Doren was dishonest, disqualified himself, lied, was immoral

18 - Unprofessional attitude, unethical, no excuse for his action

15 - Bad public relations, harm to the University reputation

14 - He would lose respect of the students, lose their trust, set a bad example

5 - Would distrust him, be wary of his future honesty

4 - His contribution would be doubtful, be uncomfortable

14 - Miscellaneous against

(Continued)

NO OPINION

15 - Need to know facts of the incident

7 - He should be judged on record before incident

11 - Miscellaneous, no opinion

## Appendix 3

## Sample - Posttest Interview

## (Includes Final Frequency Count)

In order to respect the anonymity of the university and individual departments involved in the present investigation, any specific reference in the following tables to either will be deleted. The deletion will be noted with the following mark ☆

# RE-INTERVIEW SCHEDULE

## PSYCHOLOGY RESEARCH PROJECT NO. 13

Instructions to Interviewer

In contacting the interviewee, efforts in establishing rapport may be more successful if, in your initial call to the prospective interviewee, you reflect the following idea:

> "You were kind enough to cooperate with us on our psychology research project by allowing us to interview you several weeks ago. I know this is an imposition, but if it would be possible, I would like to get your impressions in more detail on certain aspects of teaching than we were able to get from the first interview. When would you have a free period during which we could get together? Let me emphasize again that, consistent with the ethics of such research, we will not in any way reveal your individual responses to the things we will be discussing. Incidentally, this is the final interview, and we won't require any further cooperation from you. You will hear of the results of this government-supported project soon."

Another suggestion: Please record responses as fully as possible and write as legibly as possible.

NAME OF RESPONDENT FREQUENCY COUNT (n = 117 Throughout)

CODE NO.________ DEPARTMENT________

OFFICE EXTENSION________ HOME PHONE________

| Interviewers | Code Numbers | |
|---|---|---|
| Dr. Daniel E. Sheer | 1 | ________ |
| Dr. Samuel R. Pinneau | 2 | ________ |
| Dr. Laurence S. McGaughran | 3 | ________ |

Re-Interview Schedule
Psychology Research Project No. 13

1. What do you believe good university level teaching really consists of?

(1)

**ADVANTAGES**

63 - Teacher knows content, keeps up with research

55 - Good preparation and use of methods

43 - Teacher should have personality and interest in students

36 - Good teaching - students are inspired

19 - Students are taught to think

12 - Class participation

10 - Relate to other courses, give unified world view

49 - Miscellaneous

(2)

(3)

(4)

(5)

(6)

(7)

(8)

(9)

(10)

Re-Interview Schedule
Psychology Research Project No. 13

2. The video tape recorder, as you know (for Dept. "A" faculty and Dept. "B" faculty ☆ add "from your recent experience"), is a device that records on tape both a picture and sound which can be played back immediately. What, in your opinion, might be the disadvantages of such a device if it were made available to university departments as a possible means of qualitatively improving course instruction?

(1)

(2)

(3)

(4)

(5)

(6)

(7)

(8)

(9)

(10)

DISADVANTAGES

47 - Loss of personal contact

18 - TV tape wasteful, too much work and time to make

14 - Embarrassment before camera, self-consciousness

13 - TV tape too artificial

13 - Too expensive

13 - May be misused or cause unemployment

12 - Lose individual attention to student

4 - Detract from subject matter and content of course

55 - Miscellaneous

Re-Interview Schedule
Psychology Research Project No. 13

3. In your opinion, what might be the advantages of the video tape recorder as a means of improving instruction?

(1)

(2)

(3)

(4)

(5)

(6)

(7)

(8)

(9)

(10)

ADVANTAGES

43 - Possible to self-criticise to improve

42 - Good supplement and aid

28 - Can view outstanding teachers

24 - Can reach a larger number of people

19 - Good preparation and organization required

9 - Can repeat the lectures

54 - Miscellaneous advantages

Re-Interview Schedule
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(ONLY FOR RESPONDENTS NOT IN DEPARTMENT "A" OR "B")☆

4. As part of an improvement of teaching project, all of the members of the two participating experimental groups have completed television tapes of their lectures and privately viewed the results. They also have been developing video tape presentations that could theoretically be used for their introductory courses. Have you heard about this project?

Yes 29
No 68

Plus 20 not included here who were involved in the experiment

(If "No," go on to the next page.)

(If "Yes") From whom have you heard about it?

| | | |
|---|---|---|
| 17 | - | Have heard from Dept. A source |
| 6 | - | Have heard from other source than these two departments |
| 3 | - | Have heard from both Dept. A and Dept. B |
| 1 | - | Have heard from Dept. B source |

5. What have you heard about this activity?

13 - Heard something but vague about the project

10 - Have heard an opinion against the project

5 - Have heard about the procedure or other things

4 - Have heard an opinion for the project

4 - Have heard mixed feelings about the project

Re-Interview Schedule
Psychology Research Project No. 13

6. As a means of more adequately interpreting your opinions, I'd like once again to get your reactions to television instruction. As you know, some professors are strongly opposed to teaching by television; others are in favor of it. Imagine yourself again for a moment as an individual who is strongly opposed to teaching by television. Now state as many different reasons as you can for your opposition to television instruction.

(1)

(2)

(3)

(4)

(5)

(6)

(7)

(8)

(9)

(10)

DISADVANTAGES

101 - No personal contact

19 - TV doesn't motivate the students

16 - Fear of inadequacy and unemployment

16 - Lack of intellectual atmosphere

11 - Difficult to teach on TV

8 - Can't cover laboratory or workshop

7 - Controversial viewpoints can't be presented because of misinterpretation

3 - TV lowers the level of instruction

70 - Disadvantages Miscellaneous

Re-Interview Schedule
Psychology Research Project No. 13

7. Now imagine yourself again for a moment as an individual who is strongly in favor of teaching by television. State as many different reasons as you can for your support of television instruction.

(1)

(2)

(3)

(4)

(5)

(6)

(7)

(8)

(9)

(10)

ADVANTAGES

74 - TV reaches more students

63 - TV useful as a supplement

36 - Outstanding lectures available to all

34 - TV economical, effective, efficient

32 - TV raises the standard of teaching

16 - TV eases the teacher load and gives time for research

12 - TV lectures can be re-used

3 - TV has fewer distractions and can be viewed at home

56 - Miscellaneous advantages

Re-Interview Schedule
Psychology Research Project No. 13

8. How do you personally feel about television instruction?

Overview of Question 8:

| | |
|---|---|
| Favor | 54 |
| Against | 41 |
| No Opinion | 22 |

9. (Probe) Why?

Response categories and their frequency counts for Question 9 are listed in Appendix 4.

Re-Interview Schedule
Psychology Research Project No. 13

10. I believe you have already indicated to me what you believe good university teaching consists of. Now, imagine yourself in this situation. Supposing you were the Dean of a college and you wished to improve the teaching of your faculty. What approach would you take to this problem?

48 - Give rewards of money and recognition

40 - Hire competent teachers

28 - Require refresher courses and further study

22 - In-class observation and approval of lesson plans

18 - Gather student opinions

16 - Use group discussion and inter-departmental meetings

16 - Not possible for me to improve the teaching faculty

12 - Use audio-visual aids

8 - Make improvements in teaching facilities

51 - Miscellaneous

# Appendix 4

## Frequency Count of 48 Response Categories on Pre- and Post-Experiment Interviews in Answer to the Question "How Do You Personally Feel About Television Instruction? and Why?"

## Frequency Count of 48 Response Categories on Pre- and Post-Experiment Interviews in Answer to the Question "How Do You Personally Feel About Television Instruction? and Why?"

| Pre-Test | Post-Test | Item Category |
|---|---|---|
| | | TV in General |
| | | 1. General Feelings |
| 6 | 3 | I think it is the invention of the devil except in rare cases; strongly opposed. |
| 25 | 20 | TV is boring; I wouldn't teach on TV; Would get out of teaching and into research if TV took a strong hold; personally not in favor. |
| 11 | 10 | Limitations are accentuated on TV; Too many complications and personal and faculty morals; Need full administrative support; skeptical. |
| 30 | 41 | Useful in certain areas; Can be effective medium; Favor for some subjects which lend themselves to the media; More efficient for certain courses; Highly advantageous if used in suitable place; Good for certain individuals; Certain things could be presented without interruptions; Under certain circumstances. |
| 18 | 13 | Over-all TV is good; I'm in favor; all right; O.K. |
| 3 | 4 | Wonderful opportunity; Wonderful educational media; Should exploit; I'm sold on it. |
| 1 | 0 | No limit to possibilities; Has infinite possibilities. |

| Pre-Test | Post-Test | Item Category |
|---|---|---|
| | | TV in General (Cont.) |
| | | 2. Progressive |
| 4 | 2 | Gadget won't replace personal contact; Since TV is new, many want to jump on the bandwagon; Is a failure because it is a machine. |
| 4 | 7 | It's progressive; I'm in favor of anything new and expansive and doing things new ways; I'd like to try to master it; I'd like to try it; I'm not against learning something new. |
| | | 3. Needs Experimenting |
| 3 | 10 | It's a good media; should be explored and used more; Should be explored further. |
| 2 | 3 | Still open-minded, experimentally inclined, should be tested; Would have to try it out. |
| | | 4. Don't know, but: |
| 1 | 0 | Believe satisfactory, but no proof |
| 6 | 4 | Don't know facts; Don't know; no personal contact; Undecided. |
| | | Course Content<br>TV vs. Traditional Presentation |
| | | 1. Application |
| | | a. Extent of replacement of classroom lecture |
| 4 | 2 | Not possible to use in the forseeable future; Can't do adequate job; Not a satisfactory substitute; I don't believe every course should be taught on TV. |

| Pre-Test | Post-Test | Item Category |
|---|---|---|
| | | Course Content (Cont.) |
| | | I. Application |
| | | a. Extent of replacement of classroom lecture (cont.) |
| 12 | 3 | Slightly in favor of classroom teaching; I think it takes a different student body; one with more initiative and digging out; Might be of some use for those who can learn best by TV; Would not like it because teaching grows out of recitation; O.K. for limited purposes; TV for limited use; TV is limited to the areas you can apply it; Should not be overemphasized; not the method for the majority. |
| 7 | 3 | Favor with need to assure the average teacher that he will not be replaced by TV; Must be followed up or will be just entertainment; Not the complete solution to replace the professor; Not the complete answer; Should not replace the classroom; Entire course on TV for Political Science not adequate. |
| 10 | 17 | O.K. if have a period where professor and student meet; Should be small discussion groups to thresh out pros and cons along with TV lectures; Supplement with personal instruction; A good combination is TV with recitation; TV supplemented with personal instruction. |
| 6 | 14 | Favor use of closed circuit classes as a supplement; Good adjunct or complement to classroom; Good study aid and supplement; Excellent teaching aid; TV good as teaching aid. |

| Pre-Test | Post-Test | Item Category |
|---|---|---|
| | | Course Content (Cont.) |
| | | 1. Application |
| | | b. Level of Instruction |
| 5 | 3 | Partially replace millions of dollars spent for education under the guise of public relations; Not for college education; Purely for public consumption showing recent advancements; Inform the general public about science; Entertainment purposes. |
| 5 | 2 | Adult education best area for TV; Good for adult education; Tremendous value for adult education; Learn foreign language at home. |
| 9 | 5 | Good in basic courses; O.K. for beginning courses; elementary; Capitalize on TV especially at the level of freshman and introductory courses; Good idea for some courses, elementary; Should start way down the educational ladder so that individual becomes accustomed to TV instruction; Should be used in preliminary courses. |
| 3 | 0 | Bad for introductory courses; Should not abruptly start any college course on TV; Not for first year students. |
| 1 | 1 | Would extend use of TV to full course for undergraduates; not for graduates. |
| | | c. Method of Presentation of Subject |
| 1 | 3 | Courses where give facts would be good; All right for pure lecture material, Good idea for lecture courses; Prefer for large lecture room technique; Rather see good TV lecture than a poor small class. |
| 9 | 8 | Minimum of lecture and maximum of demonstration would be good; An advantage; In lab demonstration teaching; More applicable in science; present experiments rather than straight lecture; fine where more lab demonstrations; Able to see what's going on in other places. |

| Pre-Test | Post-Test | Item Category |
|---|---|---|
| | | Course Content (Cont.) |
| | | 1. Application |
| | | c. Method of Presentation of Subject (Cont.) |
| 8 | 14 | Not for art until color is improved; Not applicable to my course; Not yet in History - still prefer big lecture sessions; Not for shop - hand to hand - vocational work; Not complete substitute for lab; Music appreciation but not theory or composition; Little application for engineering work |
| | | d. Size of Class |
| 2 | 1 | Good teacher in a small class is better. |
| 5 | 7 | Very much in favor for large classes; if have large audience can spend more time preparing lecture; Better to have large class taught by TV than to limit number of students; Large size course could be taught by TV; Only for large classes. |
| 3 | 0 | Better to have certain kinds of classes taught by TV than to have large classrooms; TV has more advantages than large classrooms; overcomes classroom obstacles. |
| | | 2. Quality of Course |
| 7 | 8 | Produced mass medocrity; Skeptical - if it were good experience, other larger universities would have taken it up; The truely great schools don't use it; TV teaching not an academic position; Instruction not as good on TV; Shouldn't involve college graduates or credit; Lowers academic standards and level of instruction; commercializes education; Weakens education. |

| Pre-Test | Post-Test | Item Category |
|---|---|---|
| | | Course Content (Cont.) |
| | | 2. Quality of Course |
| 6 | 4 | TV will upgrade educational program; It works well elsewhere (Kansas City); TV better than lectures I've otherwise experienced. |
| | | Students' Attitude |
| 10 | 8 | Student is opposed; Wouldn't like to take TV course; Students seem to dislike; If I were a student, I wouldn't watch it; Students say they can't get questions answered; Students resent barriers between selves and faculty. |
| | | Effects on Learning |
| 7 | 0 | Students fail and you don't know why; Students don't learn as much as they should; Experience with TV trigonometry students gives me doubts; Have tried it with no positive results. |
| 4 | 3 | Student relaxes too much; Students too relaxed; May give students mistaken ideas; Too many distractions at home; Can't audit students' verbal performance in foreign languages; Moves too fast. |
| 4 | 4 | Very few fail TV courses; Average grades higher in TV courses; Results better than classroom; TV very effective from my experience with it; Results same as classroom. |
| | | Instructor |
| | | 1. Economy in Time |
| 4 | 10 | Have to approach TV with a lot of preparation; Can't do justice to other courses if giving a TV course; Would need constant revision; Too much administrative duty involved. |

| Pre-Test | Post-Test | Item Category |
|---|---|---|
|  |  | Instructor (Cont.) |
|  |  | 1. Economy in Time |
| 4 | 3 | Would conserve my time and energy; Could repeat if didn't understand; Economize the learners' time; For language drill. |
|  |  | 2. Economy in Cost |
| 2 | 1 | Very expensive. |
| 2 | 3 | May not be less expensive; Cost may be the same. |
| 2 | 1 | Enrollment would warrent cost at present. |
| 3 | 4 | Could be a great saving; Think inevitable in reducing cost; Efficient and economical. |
|  |  | 3. Aid Teacher Shortage |
| 12 | 6 | Will meet the Communist challenge to our technology; Relieves teaching load; Need to utilize all facilities for maximum benefits; Think inevitable in reducing faculty, salaries, and space; Will (in part) answer critical teacher shortage; Eases teacher shortage and reduces the work; TV is answer to limited facilities and teachers; To meet future increased enrollment; Need to multiply efforts of college professors to meet population demands. |
|  |  | 4. Reaches More People |
| 10 | 11 | Reaches large number of students; More students reached; reach great mass; Wonderful medium for getting knowledge universally distributed; Perhaps good where students can't come to the university. |

| Pre-Test | Post-Test | Item Category |
|---|---|---|
| | | Instructor (Cont.) |
| | | 5. Requires Special Training |
| 3 | 3 | Personal experience is the main factor; Should have training in TV teaching; Most instructors have not had sufficient experience. |
| | | 6. Limits Number of Qualified Instructors |
| 4 | 5 | Limitations are accentuated on TV; Personality of lecturer is important - same can't to TV and class lecture; Few teachers have the right personality for TV; I wouldn't be a good TV instructor; Probably fine as long as I am not involved; Not enough personality comes over TV to make it pay. |
| 2 | 0 | Depends on teacher - up to the individual; Good for certain individuals. |
| 4 | 6 | Has to be good classroom teacher - enthusiastic; The good teacher should be doing TV teaching; Could have outstanding lecturers, best lecturers available. |
| | | Student-Instructor Contact |
| 6 | 1 | Impersonal, omits individuality; Creativity not correlated with polish - would achieve polished lectures for TV; Learning depends on individual personal needs, wants, and desires; Can't handle individual deficiencies or shortcomings; TV eliminated the individual personality. |
| 27 | 8 | Leaves out interaction; Leaves out exploration of new ideas and spontaneous questions; Professor not able to grade papers based on own lectures; Student can't challenge; In favor of personal presentations where professor can correct self; Students can't express themselves; Can't ask or answer questions; Person in charge of course should be available for answering questions and giving grades; Students can't ask questions or express opinions. |

| Pre-Test | Post-Test | Item Category |
|---|---|---|
| | | Student-Instructor Contact (Cont.) |
| 27 | 27 | Loss of interpersonal relationship; I like to know my students; Would always have to be someone between professor and student with confusion in this kind of relationship; Wouldn't want to teach without student contact; Lack of personal contact; Lack of student-faculty relationship; Lose instructor-student relationship; Poor instructor in classroom better than good one on TV because of important faculty-student contact; Student needs personal contact; Learning is spirtiual process of student-teacher relationship; Lose student-teacher contact, personal contact; rapport; TV is last resort because of student-teacher contact; I would not want to be a TV instructor - I feel better with people in front of me. |
| 1 | 0 | Not particularly interested in personal contact. |
| 354 | 324 | Total Number Responses |
| 2.95 | 2.77 | Average Number Responses per Person |

## Appendix 5

## Means and Standard Deviations for 300 Osgood Scales

In order to respect the anonymity of the university and individual departments involved in the present investigation, any specific reference in the following tables to either will be deleted. The deletion will be noted with the following mark ________

Means and Standard Deviations for 300 Osgood Scales

| | Frontier Fiesta | | Night Students | |
|---|---|---|---|---|
| | Mean | S. D. | Mean | S. D. |
| Bad-Good | 4.48 | 1.75 | 5.74 | 1.34 |
| Dishonest-Honest | 4.68 | 1.37 | 5.40 | 1.26 |
| Unfair-Fair | 4.36 | 1.33 | 5.17 | 1.29 |
| Unpleasant-Pleasant | 4.82 | 1.57 | 5.19 | 1.46 |
| Worthless-Valuable | 4.48 | 1.73 | 5.98 | 1.18 |
| Rough-Smooth | 3.59 | 1.73 | 4.05 | 1.23 |
| Weak-Strong | 4.08 | 1.46 | 4.86 | 1.44 |
| Soft-Hard | 4.39 | 1.05 | 4.44 | 1.05 |
| Passive-Active | 4.96 | 1.51 | 5.03 | 1.40 |
| Slow-Fast | 4.49 | 1.14 | 4.22 | 1.20 |

| | Athletic Scholarships | | Additional Tuition Increase | |
|---|---|---|---|---|
| | Mean | S. D. | Mean | S. D. |
| Bad-Good | 4.10 | 1.93 | 2.69 | 1.83 |
| Dishonest-Honest | 3.74 | 1.70 | 5.01 | 1.46 |
| Unfair-Fair | 3.94 | 1.80 | 4.12 | 2.00 |
| Unpleasant-Pleasant | 3.89 | 1.38 | 2.38 | 1.30 |
| Worthless-Valuable | 4.29 | 1.79 | 4.46 | 1.52 |
| Rough-Smooth | 3.83 | 1.05 | 3.02 | 1.26 |
| Weak-Strong | 3.88 | 1.33 | 4.10 | 1.35 |
| Soft-Hard | 4.15 | 1.09 | 4.89 | 1.19 |
| Passive-Active | 4.50 | 1.26 | 4.62 | 1.21 |
| Slow-Fast | 4.04 | 1.03 | 4.10 | 1.02 |

| | Higher Entrance Requirements for the University of ☆ | | More Fringe Benefits with Smaller Salary Increase | |
|---|---|---|---|---|
| | Mean | S. D. | Mean | S. D. |
| Bad-Good | 5.90 | 1.50 | 3.16 | 1.76 |
| Dishonest-Honest | 5.43 | 1.40 | 4.22 | 1.35 |
| Unfair-Fair | 5.66 | 1.50 | 3.94 | 1.66 |
| Unpleasant-Pleasant | 4.50 | 1.64 | 3.77 | 1.60 |
| Worthless-Valuable | 5.92 | 1.42 | 4.08 | 1.53 |
| Rough-Smooth | 3.70 | 1.37 | 3.63 | 1.17 |
| Weak-Strong | 5.32 | 1.44 | 3.79 | 1.28 |
| Soft-Hard | 4.80 | 1.13 | 4.18 | 0.95 |
| Passive-Active | 5.11 | 1.31 | 4.24 | 1.20 |
| Slow-Fast | 4.37 | 1.09 | 3.90 | 0.85 |

| | Larger Salary Increase with Fewer Additional Fringe Benefits | | University of ☆ Becoming a State University | |
|---|---|---|---|---|
| | Mean | S. D. | Mean | S. D. |
| Bad-Good | 5.60 | 1.52 | 5.67 | 1.54 |
| Dishonest-Honest | 5.08 | 1.36 | 5.30 | 1.41 |
| Unfair-Fair | 5.51 | 1.33 | 5.64 | 1.37 |
| Unpleasant-Pleasant | 5.46 | 1.40 | 4.99 | 1.60 |
| Worthless-Valuable | 5.65 | 1.30 | 5.80 | 1.26 |
| Rough-Smooth | 4.37 | 1.22 | 4.11 | 1.50 |
| Weak-Strong | 4.90 | 1.35 | 5.01 | 1.49 |
| Soft-Hard | 4.05 | .97 | 4.21 | 1.01 |
| Passive-Active | 4.77 | 1.27 | 4.99 | 1.42 |
| Slow-Fast | 4.34 | 1.08 | 4.58 | 1.29 |

| | Admitting Qualified Negroes to the University of ☆ | | Emphasis on Research at University of ☆ | |
|---|---|---|---|---|
| | Mean | S. D. | Mean | S. D. |
| Bad-Good | 4.92 | 1.88 | 5.68 | 1.55 |
| Dishonest-Honest | 5.43 | 1.44 | 5.10 | 1.44 |
| Unfair-Fair | 5.64 | 1.47 | 5.23 | 1.48 |
| Unpleasant-Pleasant | 3.78 | 1.69 | 5.12 | 1.39 |
| Worthless-Valuable | 5.01 | 1.59 | 5.92 | 1.28 |
| Rough-Smooth | 3.30 | 1.43 | 3.93 | 1.35 |
| Weak-Strong | 4.77 | 1.48 | 5.08 | 1.57 |
| Soft-Hard | 4.57 | 1.12 | 4.47 | 1.10 |
| Passive-Active | 4.87 | 1.37 | 5.12 | 1.46 |
| Slow-Fast | 4.10 | 1.24 | 4.43 | 1.24 |

|  | Training in Teaching Methods for Professors |  | Training in Teaching Methods for Prospective Professors |  |
|---|---|---|---|---|
|  | Mean | S. D. | Mean | S. D. |
| Bad-Good | 5.00 | 1.86 | 5.31 | 1.76 |
| Dishonest-Honest | 4.85 | 1.40 | 4.92 | 1.44 |
| Unfair-Fair | 5.07 | 1.44 | 5.14 | 1.50 |
| Unpleasant-Pleasant | 4.30 | 1.56 | 4.45 | 1.55 |
| Worthless-Valuable | 5.16 | 1.77 | 5.31 | 1.71 |
| Rough-Smooth | 3.96 | 1.30 | 3.98 | 1.28 |
| Weak-Strong | 4.55 | 1.71 | 4.65 | 1.60 |
| Soft-Hard | 4.34 | 1.18 | 4.28 | 1.13 |
| Passive-Active | 4.66 | 1.45 | 4.76 | 1.48 |
| Slow-Fast | 4.24 | 1.17 | 4.29 | 1.19 |

|  | Lecture Method Supplemented by Small Discussion Sections for Large Classes |  | Straight Lecture Method for Large Classes |  |
|---|---|---|---|---|
|  | Mean | S. D. | Mean | S. D. |
| Bad-Good | 5.74 | 1.37 | 3.77 | 1.85 |
| Dishonest-Honest | 5.06 | 1.27 | 4.31 | 1.32 |
| Unfair-Fair | 5.39 | 1.35 | 3.98 | 1.55 |
| Unpleasant-Pleasant | 5.05 | 1.36 | 4.02 | 1.14 |
| Worthless-Valuable | 5.68 | 1.27 | 4.26 | 1.35 |
| Rough-Smooth | 4.10 | 1.26 | 3.59 | 1.24 |
| Weak-Strong | 4.89 | 1.47 | 3.52 | 1.32 |
| Soft- Hard | 4.37 | 1.06 | 4.29 | 1.02 |
| Passive-Active | 4.94 | 1.32 | 3.78 | 1.31 |
| Slow-Fast | 4.37 | 1.16 | 3.90 | 1.30 |

|  | Television Instruction in Introductory Courses |  | Straight Television Instruction for Large Classes |  |
|---|---|---|---|---|
|  | Mean | S. D. | Mean | S. D. |
| Bad-Good | 3.95 | 1.86 | 2.97 | 1.70 |
| Dishonest-Honest | 3.93 | 1.31 | 3.81 | 1.48 |
| Unfair-Fair | 4.03 | 1.59 | 3.47 | 1.57 |
| Unpleasant-Pleasant | 3.99 | 1.42 | 3.57 | 1.40 |
| Worthless-Valuable | 4.22 | 1.61 | 3.61 | 1.53 |
| Rough-Smooth | 3.62 | 1.30 | 3.40 | 1.28 |
| Weak-Strong | 3.70 | 1.52 | 3.22 | 1.36 |
| Soft-Hard | 4.20 | 1.12 | 4.21 | 1.18 |
| Passive-Active | 3.95 | 1.42 | 3.53 | 1.31 |
| Slow-Fast | 4.02 | 1.25 | 3.93 | 1.29 |

| | Honors Courses Consisting Only of Textbooks and Final Exams. | | Correspondence Courses | |
|---|---|---|---|---|
| | Mean | S. D. | Mean | S. D. |
| Bad-Good | 3.91 | 1.92 | 3.53 | 1.83 |
| Dishonest-Honest | 4.28 | 1.48 | 3.97 | 1.44 |
| Unfair-Fair | 4.24 | 1.67 | 4.07 | 1.49 |
| Unpleasant-Pleasant | 4.27 | 1.37 | 3.73 | 1.28 |
| Worthless-Valuable | 4.37 | 1.63 | 3.92 | 1.56 |
| Rough-Smooth | 3.48 | 1.21 | 3.49 | 1.18 |
| Weak-Strong | 3.81 | 1.59 | 3.17 | 1.39 |
| Soft-Hard | 4.39 | 1.24 | 4.00 | 1.20 |
| Passive-Active | 4.06 | 1.43 | 3.81 | 1.32 |
| Slow-Fast | 4.20 | 1.20 | 3.72 | 1.19 |

| | Television Instruction Supplemented by Small Discussion Section for Large Classes | | Television Instruction in Advanced Courses | |
|---|---|---|---|---|
| | Mean | S. D. | Mean | S. D. |
| Bad-Good | 4.90 | 1.63 | 3.04 | 1.83 |
| Dishonest-Honest | 4.72 | 1.33 | 3.99 | 1.50 |
| Unfair-Fair | 4.80 | 1.42 | 3.69 | 1.64 |
| Unpleasant-Pleasant | 4.38 | 1.35 | 3.64 | 1.49 |
| Worthless-Valuable | 4.85 | 1.48 | 3.52 | 1.66 |
| Rough-Smooth | 3.97 | 1.22 | 3.38 | 1.26 |
| Weak-Strong | 4.26 | 1.46 | 3.22 | 1.50 |
| Soft-Hard | 4.28 | 0.98 | 4.19 | 1.21 |
| Passive-Active | 4.45 | 1.28 | 3.67 | 1.41 |
| Slow-Fast | 4.25 | 1.11 | 3.93 | 1.25 |

| | Answering Students' Questions in Large Classes | | Teaching Machines | |
|---|---|---|---|---|
| | Mean | S. D. | Mean | S. D. |
| Bad-Good | 5.00 | 1.63 | 3.99 | 1.66 |
| Dishonest-Honest | 5.05 | 1.34 | 4.16 | 1.46 |
| Unfair-Fair | 5.10 | 1.48 | 4.08 | 1.41 |
| Unpleasant-Pleasant | 4.39 | 1.44 | 3.95 | 1.40 |
| Worthless-Valuable | 5.18 | 1.35 | 4.17 | 1.46 |
| Rough-Smooth | 3.48 | 1.24 | 3.91 | 1.13 |
| Weak-Strong | 4.51 | 1.36 | 3.77 | 1.39 |
| Soft-Hard | 4.57 | 1.03 | 3.98 | 1.02 |
| Passive-Active | 4.73 | 1.24 | 3.96 | 1.41 |
| Slow-Fast | 3.52 | 1.26 | 4.22 | 1.26 |

| | Myself as a Professor | | Myself Conducting a Lecture Course | |
|---|---|---|---|---|
| | Mean | S. D. | Mean | S. D. |
| Bad-Good | 5.56 | 1.02 | 5.46 | 1.21 |
| Dishonest-Honest | 6.07 | 1.16 | 5.81 | 1.24 |
| Unfair-Fair | 6.08 | 1.16 | 5.84 | 1.22 |
| Unpleasant-Pleasant | 5.53 | 1.20 | 5.41 | 1.26 |
| Worthless-Valuable | 5.76 | 1.06 | 5.54 | 1.02 |
| Rough-Smooth | 4.07 | 1.33 | 4.39 | 1.35 |
| Weak-Strong | 5.36 | 1.23 | 5.23 | 1.21 |
| Soft-Hard | 4.81 | 1.12 | 4.63 | 1.16 |
| Passive-Active | 5.72 | 1.22 | 5.49 | 1.29 |
| Slow-Fast | 4.75 | 1.21 | 4.73 | 1.17 |

| | Myself Conducting a Television Course | | Myself Conducting a Large Class | |
|---|---|---|---|---|
| | Mean | S. D. | Mean | S. D. |
| Bad-Good | 3.90 | 1.70 | 5.24 | 1.33 |
| Dishonest-Honest | 4.82 | 1.53 | 5.58 | 1.29 |
| Unfair-Fair | 4.74 | 1.48 | 5.56 | 1.33 |
| Unpleasant-Pleasant | 4.34 | 1.63 | 5.04 | 1.43 |
| Worthless-Valuable | 4.32 | 1.40 | 5.31 | 1.13 |
| Rough-Smooth | 3.71 | 1.37 | 4.16 | 1.33 |
| Weak-Strong | 4.13 | 1.47 | 5.01 | 1.30 |
| Soft-Hard | 4.44 | 1.10 | 4.76 | 1.11 |
| Passive-Active | 4.62 | 1.43 | 5.36 | 1.29 |
| Slow-Fast | 4.17 | 1.23 | 4.65 | 1.18 |

| | Myself Conducting a Small Class | | Myself Conducting an Introductory Course | |
|---|---|---|---|---|
| | Mean | S. D. | Mean | S. D. |
| Bad-Good | 6.07 | 1.03 | 5.70 | 1.30 |
| Dishonest-Honest | 5.97 | 1.22 | 5.76 | 1.30 |
| Unfair-Fair | 6.04 | 1.16 | 5.91 | 1.21 |
| Unpleasant-Pleasant | 5.96 | 1.16 | 5.46 | 1.35 |
| Worthless-Valuable | 5.92 | 1.06 | 5.66 | 1.09 |
| Rough-Smooth | 4.73 | 1.56 | 4.41 | 1.50 |
| Weak-Strong | 5.70 | 1.13 | 5.44 | 1.23 |
| Soft-Hard | 4.59 | 1.27 | 4.70 | 1.13 |
| Passive-Active | 5.72 | 1.27 | 5.57 | 1.26 |
| Slow-Fast | 5.05 | 1.25 | 4.77 | 1.18 |

| | Myself Conducting an Advanced Course | | Myself Doing Publishable Research | |
|---|---|---|---|---|
| | Mean | S. D. | Mean | S. D. |
| Bad-Good | 5.74 | 1.20 | 5.11 | 1.51 |
| Dishonest-Honest | 5.78 | 1.29 | 5.59 | 1.28 |
| Unfair-Fair | 5.87 | 1.21 | 5.23 | 1.32 |
| Unpleasant-Pleasant | 5.70 | 1.25 | 4.97 | 1.51 |
| Worthless-Valuable | 5.73 | 1.08 | 5.27 | 1.31 |
| Rough-Smooth | 4.42 | 1.45 | 3.85 | 1.30 |
| Weak-Strong | 5.38 | 1.26 | 4.80 | 1.37 |
| Soft-Hard | 4.75 | 1.15 | 4.63 | 1.15 |
| Passive-Active | 5.53 | 1.30 | 5.03 | 1.38 |
| Slow-Fast | 4.80 | 1.23 | 3.94 | 1.36 |

# Appendix 6

## Means of 7-Point Osgood Scales for Student Sample

N=45

In order to respect the anonymity of the university and individual departments involved in the present investigation, any specific reference in the following tables to either will be deleted. The deletion will be noted with the following mark _ ☆ _

| | Lecture Method Supplemented by Small Discussion Section for Large Classes | Straight Lecture Method for Large Classes |
|---|---|---|
| | Mean | Mean |
| Bad-Good | 5.07 | 3.52 |
| Dishonest-Honest | 5.53 | 4.59 |
| Unfair-Fair | 5.70 | 3.95 |
| Unpleasant-Pleasant | 6.02 | 3.41 |
| Worthless-Valuable | 5.91 | 4.41 |
| Rough-Smooth | 4.56 | 3.45 |
| Weak-Strong | 4.95 | 3.23 |
| Soft-Hard | 4.14 | 5.27 |
| Passive-Active | 4.67 | 3.61 |
| Slow-Fast | 4.37 | 5.23 |

| | Television Instruction in Introductory Courses | Straight Television Instruction for Large Classes |
|---|---|---|
| | Mean | Mean |
| Bad-Good | 2.93 | 2.70 |
| Dishonest-Honest | 4.37 | 4.39 |
| Unfair-Fair | 3.53 | 2.93 |
| Unpleasant-Pleasant | 3.53 | 3.19 |
| Worthless-Valuable | 4.25 | 3.88 |
| Rough-Smooth | 2.93 | 2.93 |
| Weak-Strong | 3.18 | 2.81 |
| Soft-Hard | 5.18 | 5.48 |
| Passive-Active | 3.74 | 3.19 |
| Slow-Fast | 4.70 | 4.81 |

| | Television Instruction Supplemented by Small Discussion Sections for Large Classes | Television Instruction in Advanced Courses |
|---|---|---|
| | Mean | Mean |
| Bad-Good | 6.18 | 2.70 |
| Dishonest-Honest | 4.95 | 3.95 |
| Unfair-Fair | 5.07 | 3.14 |
| Unpleasant-Pleasant | 4.51 | 3.37 |
| Worthless-Valuable | 5.25 | 4.52 |
| Rough-Smooth | 4.23 | 3.42 |
| Weak-Strong | 4.65 | 3.02 |
| Soft-Hard | 4.76 | 5.56 |
| Passive-Active | 4.34 | 3.98 |
| Slow-Fast | 4.92 | 4.81 |

| | Teaching Machines | Most Professors I Have Had at ☆ |
|---|---|---|
| | Mean | Mean |
| Bad-Good | 4.05 | 5.17 |
| Dishonest-Honest | 4.73 | 6.03 |
| Unfair-Fair | 4.40 | 5.84 |
| Unpleasant-Pleasant | 3.72 | 5.28 |
| Worthless-Valuable | 4.66 | 5.68 |
| Rough-Smooth | 3.93 | 4.45 |
| Weak-Strong | 3.95 | 4.86 |
| Soft-Hard | 4.86 | 5.22 |
| Passive-Active | 3.82 | 4.77 |
| Slow-Fast | 5.19 | 5.78 |

| | Most Professor I Have Had at ☆ Conducting a Lecture Course | Most Professors Conducting a Television Course |
|---|---|---|
| | Mean | Mean |
| Bad-Good | 4.91 | 4.79 |
| Dishonest-Honest | 5.60 | 5.30 |
| Unfair-Fair | 5.28 | 4.98 |
| Unpleasant-Pleasant | 4.93 | 4.79 |
| Worthless-Valuable | 5.30 | 4.74 |
| Rough-Smooth | 3.09 | 3.86 |
| Weak-Strong | 4.54 | 4.55 |
| Soft-Hard | 5.16 | 4.83 |
| Passive-Active | 4.17 | 4.06 |
| Slow-Fast | 5.30 | 5.55 |

| | Most Professors at ☆ Conducting a Large Class | Most Professors at ☆ Conducting a Small Class |
|---|---|---|
| | Mean | Mean |
| Bad-Good | 4.81 | 5.90 |
| Dishonest-Honest | 5.81 | 6.27 |
| Unfair-Fair | 5.34 | 6.11 |
| Unpleasant-Pleasant | 4.65 | 5.95 |
| Worthless-Valuable | 5.04 | 5.95 |
| Rough-Smooth | 3.27 | 4.06 |
| Weak-Strong | 4.25 | 5.29 |
| Soft-Hard | 5.18 | 4.95 |
| Passive-Active | 3.97 | 5.22 |
| Slow-Fast | 5.31 | 5.38 |

| | Most Professors at ☆ Conducting an Introductory Course | Most Professors at ☆ Conducting an Advanced Course |
|---|---|---|
| | Mean | Mean |
| Bad-Good | 4.90 | 5.45 |
| Dishonest-Honest | 6.50 | 5.50 |
| Unfair-Fair | 5.70 | 5.34 |
| Unpleasant-Pleasant | 5.06 | 5.22 |
| Worthless-Valuable | 5.43 | 5.70 |
| Rough-Smooth | 3.52 | 3.14 |
| Weak-Strong | 4.50 | 5.05 |
| Soft-Hard | 5.00 | 5.14 |
| Passive-Active | 4.63 | 4.81 |
| Slow-Fast | 5.02 | 5.19 |

# Appendix 7

# Detailed Results of Content Analyses of Reports of Television Production Coordinator and Individual Professors in Experimental Groups

# Detailed Results of Content Analyses of Reports of Television Production Coordinator and Individual Professors in Experimental Groups

The following observations* were based on a content analysis of the report of the Television Production Coordinator. Interesting background for these observations will be evident as the reader refers again to that portion of the text that describes the video taping "experimental" phase of the present study.

I. Subjects from Department A

A. Subjects' Apparent Attitudes

1. Pro-ITV
   - a. Tried hard to cooperate
   - b. Ready to do over if not satisfactory
   - c. Used V. T. R. for improvement idea very well
   - d. Thought V. T. R. good experiment
   - e. Asked for help freely
   - f. Highly critical of self
   - g. Convinced TV can be used as "tool"
   - h. Pleased with how little time it actually took to make the tape.
   - i. Seemed to know what she wanted
2. Against ITV
   - a. Resentment of compulsory participation without relief (from teaching load) for putting lecture on TV
   - b. Apparent desire to be left off camera a great deal
   - c. Seemed rather indifferent to whole process

---

* Note: These observations were made before, during, and following the video-taping sessions.

2. Against ITV (Cont.)
    - d. Attitude change from enthusiastic to indifferent due to complexity of production
    - e. Instructors felt relegated to an inferior position, perhaps
    - f. Compained of wide shots
    - g. Not sold on too many charts and other visuals
    - h. Fairly hostile
    - i. Seemed fairly disinterested in the whole thing, although subject did give it a good try.
    - j. Would not look at V. T. R.
    - k. Generally disinterested
    - l. Unusual "shyness" of subject posed a serious problem

B. Performance

1. Good tape
2. A theatrical performance
3. Not very good tape to be retaped
4. Slowed down (talking speed) considerably
5. Did complete rehearsal, since subject was still unaware of what was going to happen in the studio
6. Read the script word-for-word but was still fairly effective

II. Subjects from Department B

A. Subjects' Apparent Attitudes

1. Pro-ITV
    - a. Seemed to be very enthusiastic about television
    - b. Cooperative and well-prepared
    - c. Admitted how well he got along without students around
    - d. Seemed convinced of teaching improvement possibilities
    - e. Seemed interested
    - f. Adapted to TV nicely and seemed to evaluate the experience easily
    - g. Probably a bright fellow
    - h. Cooperative and affable
    - i. Easy to direct
    - j. Worked hard at preparation
    - k. Young and cooperative
    - l. Willing to change his usual methods to utilize TV to its fullest extent

1. Pro-ITV (Cont.)
    - m. Seemed to learn from and appreciate the test-tape experience
    - n. Rehearsed very well
    - o. Liked Mathematics series
    - p. Not hostile to television
    - q. Would like to see test of Television versus New Television Teaching
    - r. Seemed to enjoy the whole thing

2. Against ITV
    - a. Seemed to have lost some of the enthusiasm for television and in some respect seemed a little hostile to the whole thing
    - b. A little worried about English Usage
    - c. Extremely self-conscious
    - d. Still not certain about goals of project
    - e. Seemed glad the part was done with
    - f. Seemed disinterested, but it was hard to tell

B. Performance

1. The VTR was rather poor
2. Final tape good, but probably only a fair use of TV's potential where Department B is concerned
3. Cooperative and well-prepared
4. Very good performance
5. Did fairly well
6. A little nervous; made several errors
7. Very nervous. Made respectable tape, however
8. Very good composure for television
9. Excellent delivery
10. Easy to direct
11. Not ruffled by camera, microphone, etc.
12. Misjudged length of lecture
13. Did superior job on retape
14. Got a little frisky and tried out ad-libbing away from the script
15. Generally a good tape
16. Rather complex control-wise
17. Tremendous use of models for demonstration
18. A little nervous but got over it
19. Method demanded extensive use of the blackboard

The following data illustrates a picture of television course preparation behavior that may be obtained from a sophisticated television production director. The Production Coordinator's Report indicates that the use of visual aids is somewhat less by Department B than by Department A.

VISUAL AIDS

| | None | Some | Many |
|---|---|---|---|
| Department A | 0% | 57% | 43% |
| Department B | 30% | 40% | 30% |

Pre-production tapes as well as "outside" preparation was more extensive for the "A" subjects than the "B" subjects.

PRE-PRODUCTION TAPES

| | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| Department A | 14% | 45% | 27% | 14% |
| Department B | 10% | 90% | 0% | 0% |

OUTSIDE PREPARATION

| | None | Some | Extensive |
|---|---|---|---|
| Department A | 0% | 29% | 71% |
| Department B | 30% | 50% | 20% |

The Production Coordinator's Report makes no mention of non-cooperativeness of hostility among "B" subjects with only 10% of the cases being indifferent, whereas 27% of the cases from Department "A" were reported as hostile and 14% indifferent.

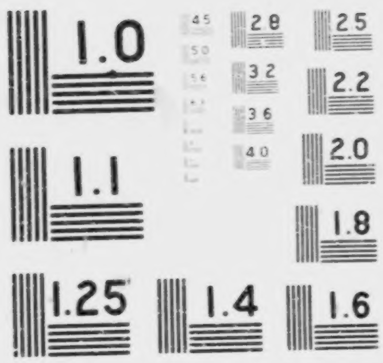
COOPERATIVENESS

| | Cooperative | Indifferent | (Hostile) Non-Cooperative |
|---|---|---|---|
| Department A | 59% | 14% | 27% |
| Department B | 70% | 10% | 0% |

6 OF 6

ED

010542


1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963

When the personal reports were rated on a scale of 1-5 for "Favor to Against", the Department B subjects showed a mean score of 2.6 where Department A showed a 3.4 mean score. This would add more weight to the contention that the "B" subjects were less personally involved and more in favor of television, whereas the "A" group was less in favor of television.

Rating (1-5) (Favor-Against) of Personal Reports

| Dept. B | Dept. A |
|---|---|
| 4 | 2 |
| 2 | 5 |
| 3 | 4 |
| 3 | 4 |
| 2 | 5 |
| 3 | 1 |
| 4 | 2 |
| 2 | 4 |
| 3 | 27 |
| 7 | 8 = 3.4 |
| 1 | |
| 30 | |
| 11 = 2.7 | |

In comparing the two departments with the results obtained on the posttest, no apparent trends were established.

Posttest Rating

| | Dept. B | Dept. A |
|---|---|---|
| Favor | 1 | 2 |
| Against | 4 | 3 |
| Undecided | 6 | 3 |

Posttest versus Personal Involvement (Judged: Personal Report)

| | Greatly | | | None |
|---|---|---|---|---|
| Favor | | | 3 | |
| Against | 1 | | 3 | 3 |
| Undecided | 1 | 1 | 2 | 5 |

Posttest versus Pronoun Person of Report

| | 1st Person | 2nd Person |
|---|---|---|
| Favor | 2 | 1 |
| Against | 3 | 4 |
| Undecided | 3 | 6 |

The report also indicates that the self-concept among the Department B subjects is equally divided between self-satisfied and self-critical, whereas Department A is reported as being 44% self-critical and only 14% self-satisfied.

As a basis for a comparison with the television coordinator's report, individual reports on this exposure of theprofessors were content analyzed simultaneously. Using very specific categories, some rather interesting data emerged. To begin with, on the judged evaluation of "personal involvement", Department B subjects were predominately detached emotionally, with only a few cases of slight personal involvement, whereas the Department A subjects ranged from a slight personal involvement to highly personally involved, with no cases of personally detached.

Dept. B

Involved — Detached

| 3 | 2 | 1 | 0 |
|---|---|---|---|
| 0 | 0 | 3 | 8 |

Dept. A

Involved — Detached

| 3 | 2 | 1 | 0 |
|---|---|---|---|
| 2 | 1 | 5 | 0 |

There seems to be an inability of the subjects using first person pronouns in their reports to show neutrality. They tend to be somewhat "against". Whereas, those persons using predominately third person pronouns, indicating less personal involvement, cluster around the neutral - some being able to see both advantages and disadvantages. None of these subjects using third person pronouns are strongly "against" television as a teaching device.

| | | 1st Person | 3rd Person |
|---|---|---|---|
| Favor | 1 | 1 | 1 |
| | 2 | 2 | 3 |
| | 3 | 0 | 5 |
| | 4 | 3 | 2 |
| Against | 5 | 2 | 0 |

In regard to this trend, it was noted that from Department B only one report was written in the first person with 10 reports written in the third person, while only one report from Department A was written in the third person and 7 written in the first person.

PERSON OF REPORT

Dept. B

| 1st Person | 3rd Person |
|---|---|
| 1 | 10 |

Dept. A

| 1st Person | 3rd Person |
|---|---|
| 7 | 1 |

### Person of Report

Dept. B

| 1st | 3rd |
|---|---|
| 1 | 10 |

Dept. A

| 1st | 3rd |
|---|---|
| 7 | 1 |

### Organization of Report

Dept. B

| Most | | Least |
|---|---|---|
| Outline | Enumeration | None |
| 5 | 4 | 0 |

Dept. A

| Most | | Least |
|---|---|---|
| Outline | Enumeration | None |
| 1 | 2 | 4 |

### Length of Report (in pages)

Dept. B

| 1/2 | 1 | 1 1/2 | 2 | 2 1/2 |
|---|---|---|---|---|
| 4 | 1 | 2 | 3 | 1 |

Dept. A

| 1/2 | 1 | 1 1/2 | 2 | 2 1/2 |
|---|---|---|---|---|
| 4 | 2 | 1 | 1 | 0 |

Considering the organization of those personal reports as outlined, enumerated or none, Department B was divided almost equally between "outline" and "enumerated" with no "non-organized" (extemporaneous) report, whereas in the case of the Department A reports, only one report was outlined, two enumerated, and the remaining majority in an extemporaneous form.

The more highly organized papers (that is, those papers using outline format) ranged from being very favorable to the television to being mildly against; but none were highly against. Whereas, those papers showing no organization ranged from being highly opposed to the use of television to being mildly in favor of it, with none being highly in favor. Those persons showing a medium amount of organization in their papers (that is, enumeration) clustered about the middle of the scale and tended to see advantages or disadvantages.

A. - Organization vs. Subjective Evaluation

| | | Outline | Enumeration | None |
|---|---|---|---|---|
| Favor | 1 | 1 | 1 | |
| | 2 | 2 | 2 | 1 |
| | 3 | 1 | 4 | |
| | 4 | 3 | 1 | 1 |
| Against | 5 | | | 2 |

B. - Organization vs. Personal Involvement

| | | Outline | Enumeration | None |
|---|---|---|---|---|
| Very Involved | 3 | | | 2 |
| | 2 | | | 1 |
| | 1 | 4 | 3 | 1 |
| Detached | 0 | 3 | 5 | |

C. - Organization of Report vs. Posttest

| | Outline | Enumeration | None |
|---|---|---|---|
| Favor | | 2 | 1 |
| Against | 3 | 4 | 1 |
| Undecided | 4 | 3 | 2 |

Personal Involvement vs. Judged Rating (Favor-Against) from Personal Reports

| | | Favor | | | | | | Against |
|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | |
| Involved | 3 | | | | | | 2 | |
| | 2 | | | | | 1 | | |
| | 1 | | 1 | 3 | 1 | 3 | | |
| Uninvolved | 0 | | 1 | 2 | 4 | 1 | | |

An inspection of the judged (Favor vs. Against) rating of the personal reports vs. personal involvement (as indicated in the reports) show that those subjects not personally involved and those mildly personally involved are dispersed from favoring to mildly against, with the majority being centered at the mid-point. Also the most highly emotionally involved are the strongest "against" subjects.

## DEPARTMENT A

### Visual Aids

| None | Some | Many |
|---|---|---|
| 0 | 4 | 3 |
| 0% | 57% | 43% |

### Preparation (Outside)

| None | Some | Extensive |
|---|---|---|
| 0 | 2 | 5 |
| 0% | 29% | 71% |

### Self-Concept

| Openly Self-Critical | | Self-Satisfied |
|---|---|---|
| 3 | 3 | 1 |
| 44% | 42% | 14% |

### Cooperativeness

| Cooperative | In-Different | Hostile/Non-Cooperative |
|---|---|---|
| 4 | 1 | 2 |
| 59% | 14% | 27% |

## DEPARTMENT B

### Visual Aids

| None | Some | Many |
|---|---|---|
| 3 | 4 | 3 |
| 30% | 40% | 30% |

### Preparation (Outside)

| None | Some | Extensive |
|---|---|---|
| 3 | 5 | 2 |
| 30% | 50% | 20% |

### Self-Concept

| Openly Self-Critical | | Self-Satisfied |
|---|---|---|
| 4 | 2 | 4 |
| 40% | 20% | 40% |

### Cooperativeness

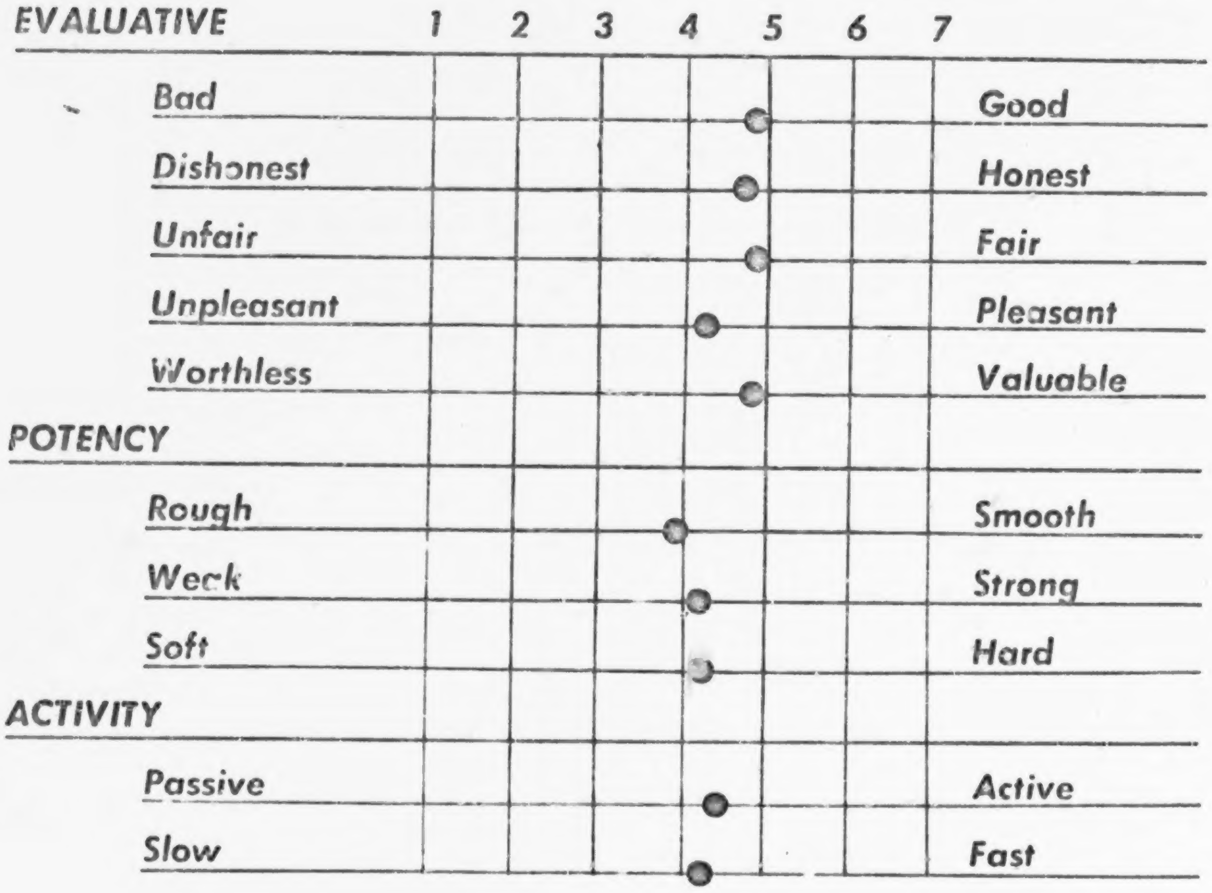
| Cooperative | In-Different | Hostile/Non-Cooperative |
|---|---|---|
| 7 | 1 | 2 |
| 70% | 10% | 20% |

# Appendix 8

## Graphic Representations of Mean Scale Values of the Osgood Questions

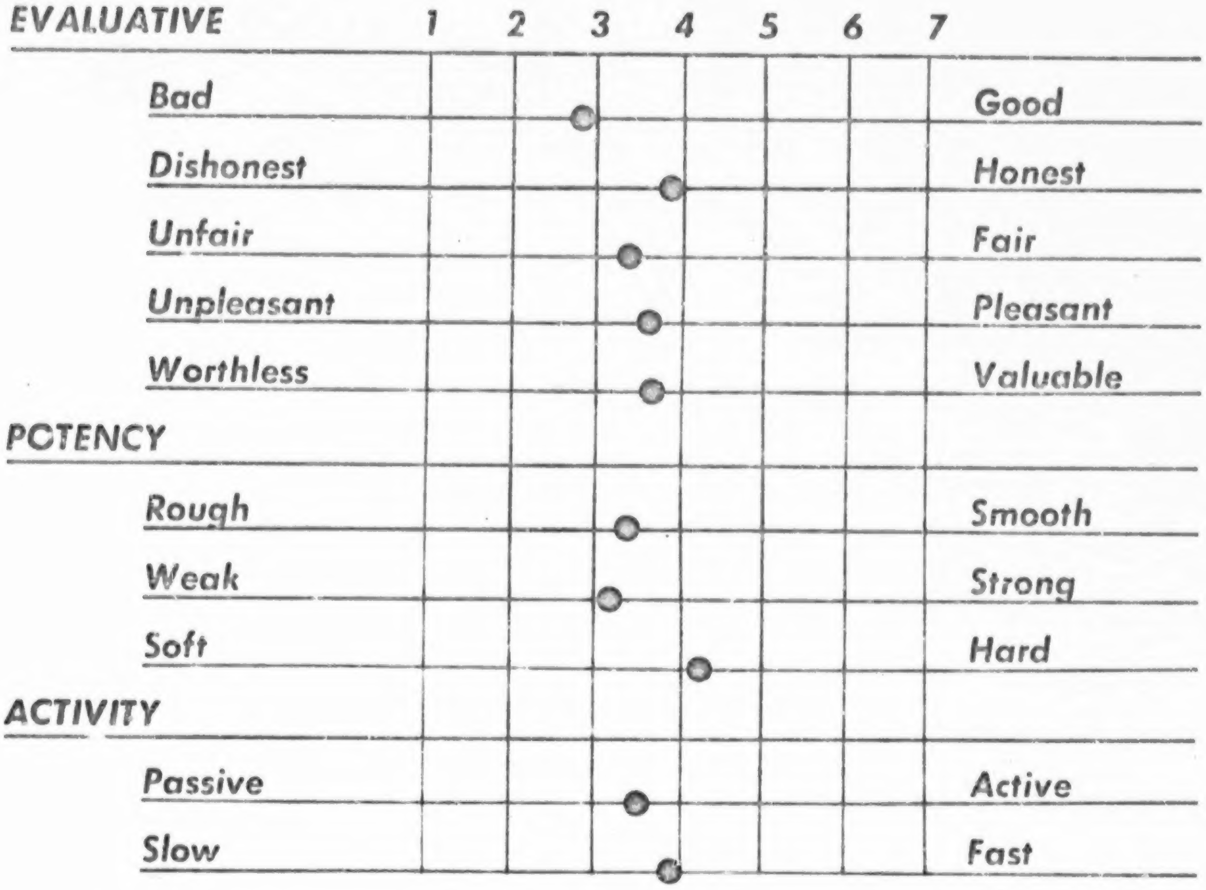
## Graphic Representation of Mean Scale Values for the Osgood Question

"TELEVISION INSTRUCTION SUPPLEMENTED BY SMALL DISCUSSION SECTIONS FOR LARGE CLASSES"



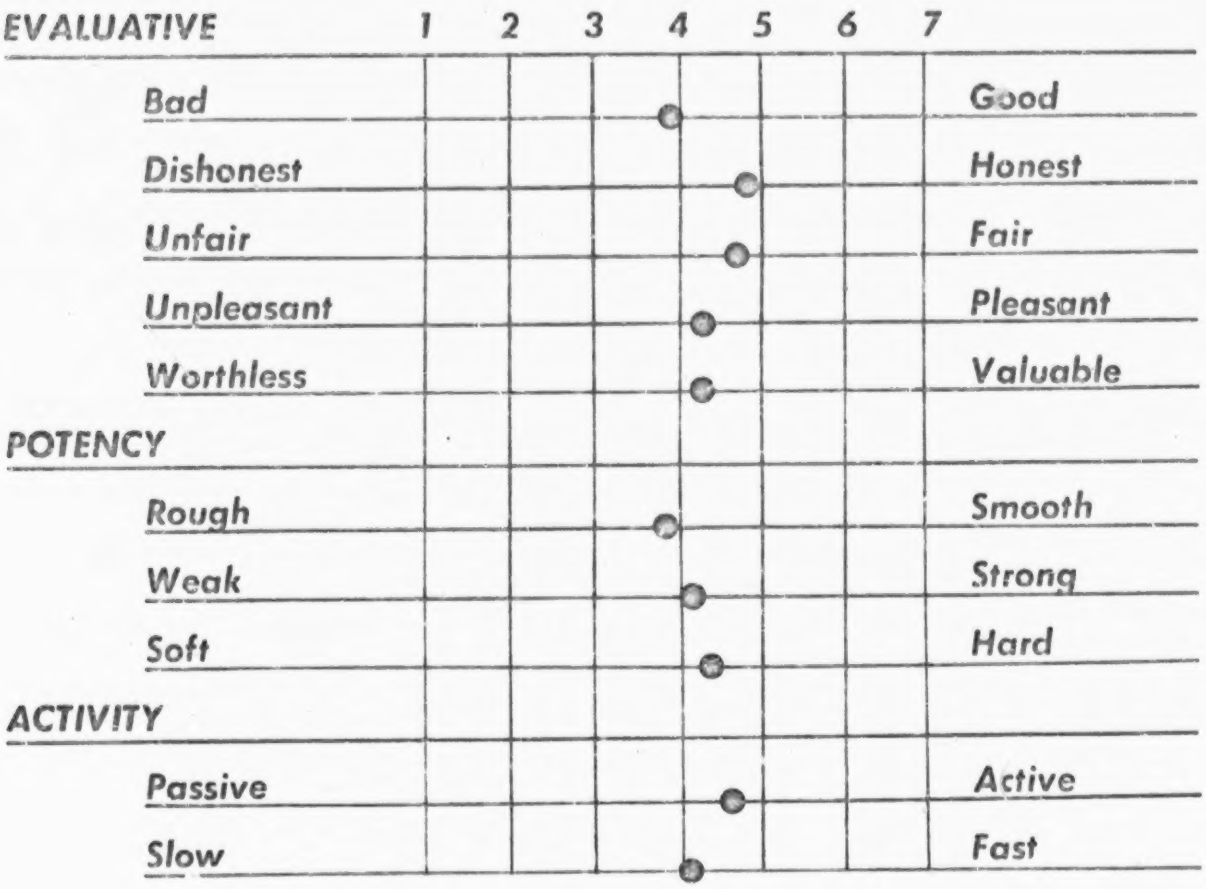
## Graphic Representation of Mean Scale Values for the Osgood Question

"STRAIGHT TELEVISION INSTRUCTION FOR LARGE CLASSES"



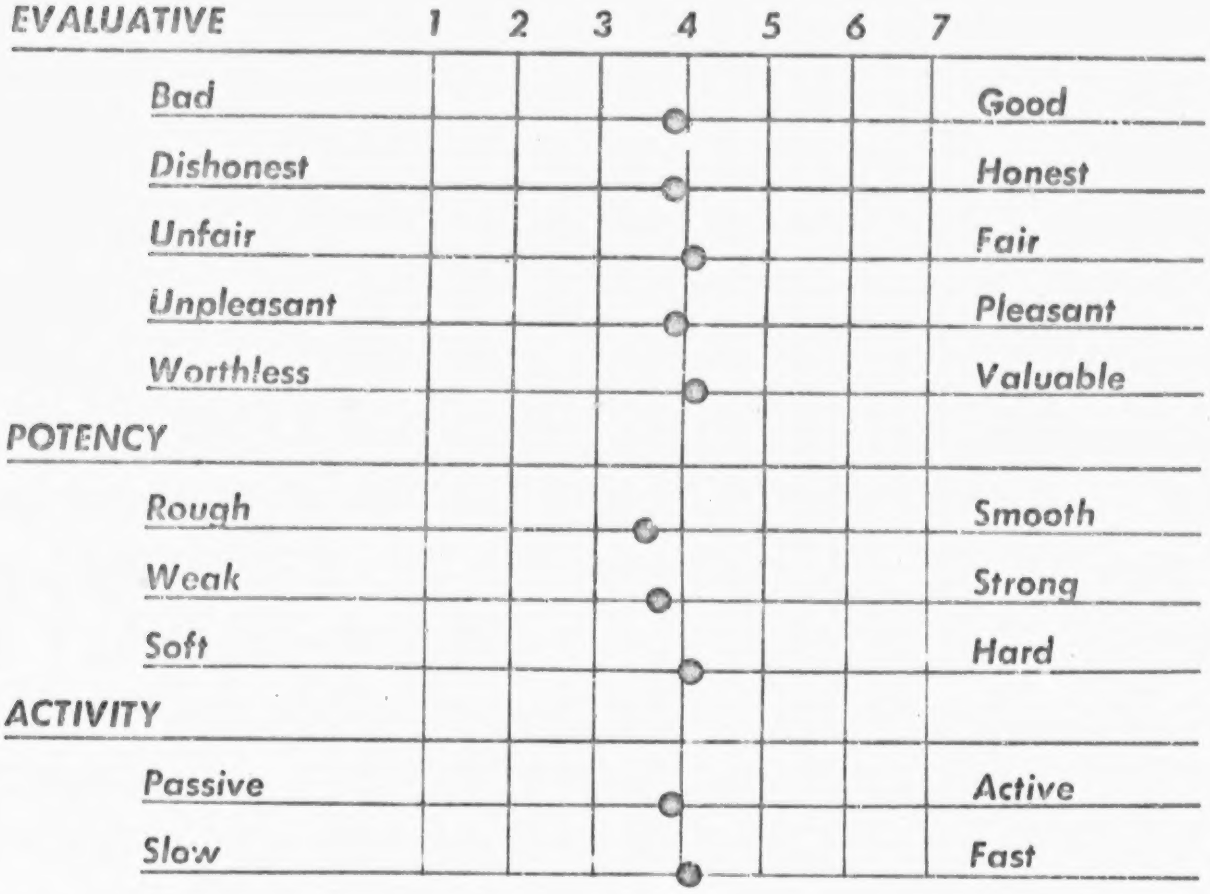
## Graphic Representation of Mean Scale Values for the Osgood Question

"MYSELF CONDUCTING A TELEVISION COURSE"



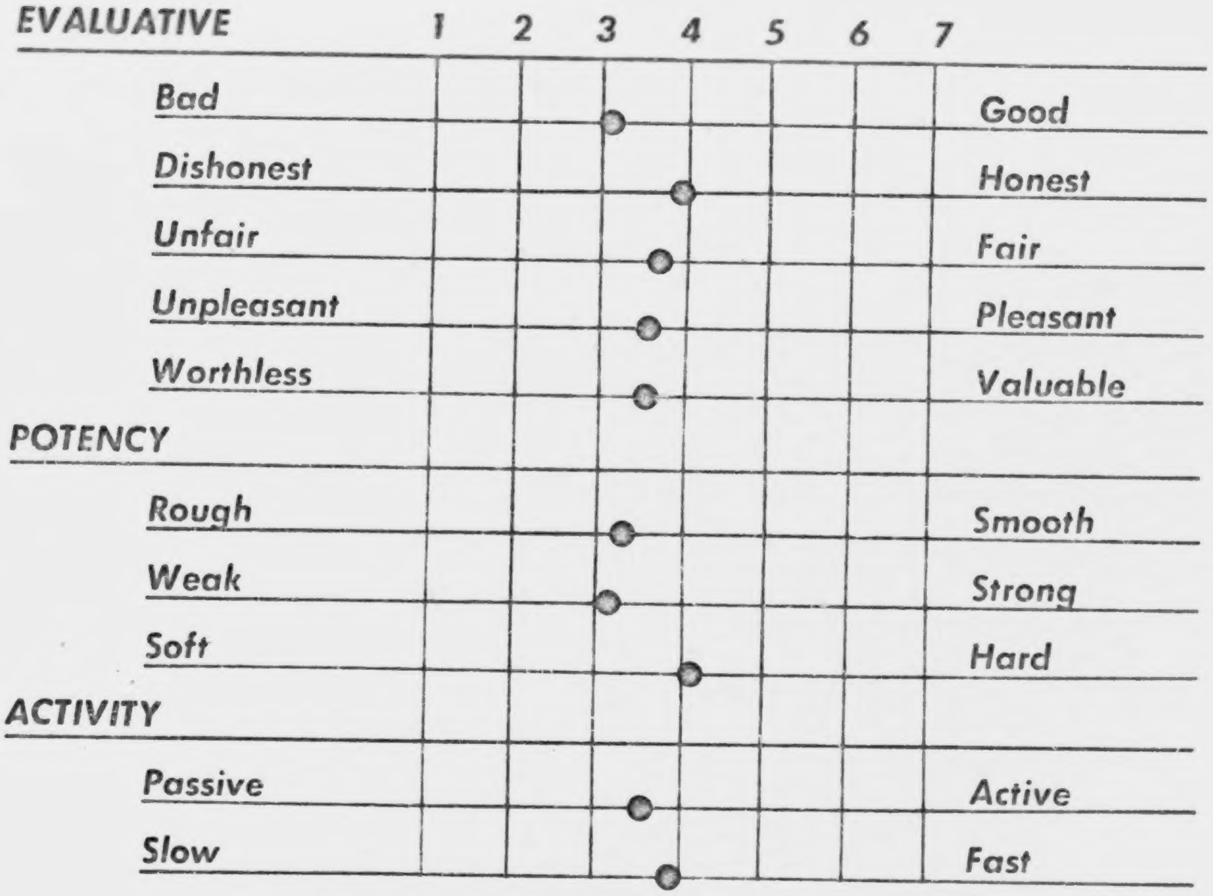
## Graphic Representation of Mean Scale Values for the Osgood Question

"TELEVISION INSTRUCTION IN INTRODUCTORY COURSES"



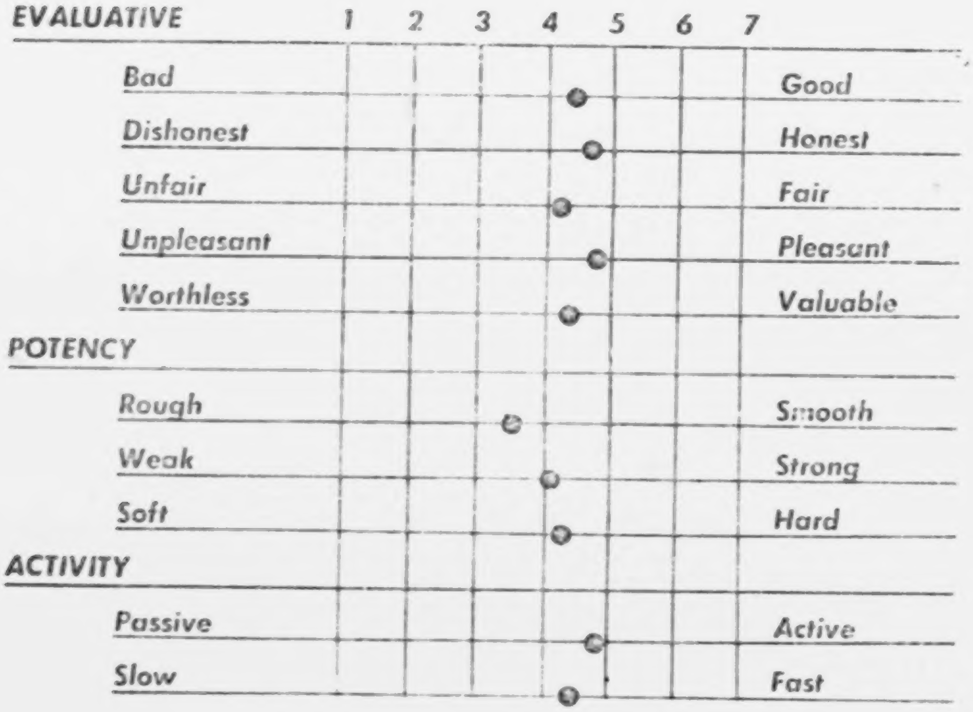
## Graphic Representation of Mean Scale Values for the Osgood Question

"TELEVISION INSTRUCTION IN ADVANCED COURSES"



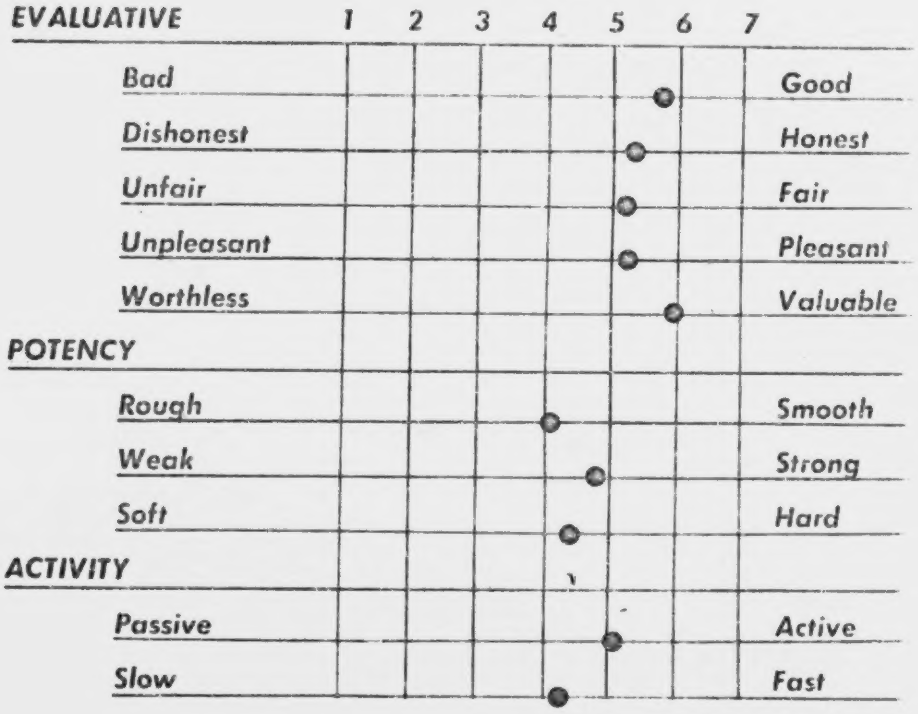
## Graphic Representation of Mean Scale Values for the Osgood Question

"FRONTIER FIESTA"



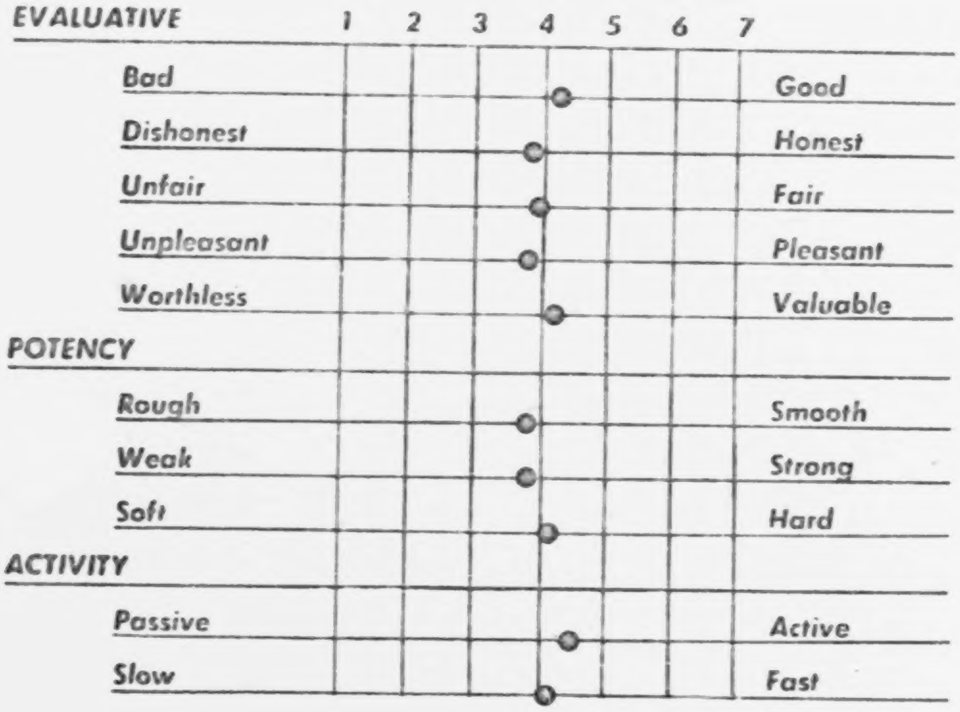
## Graphic Representation of Mean Scale Values for the Osgood Question

"NIGHT STUDENTS"



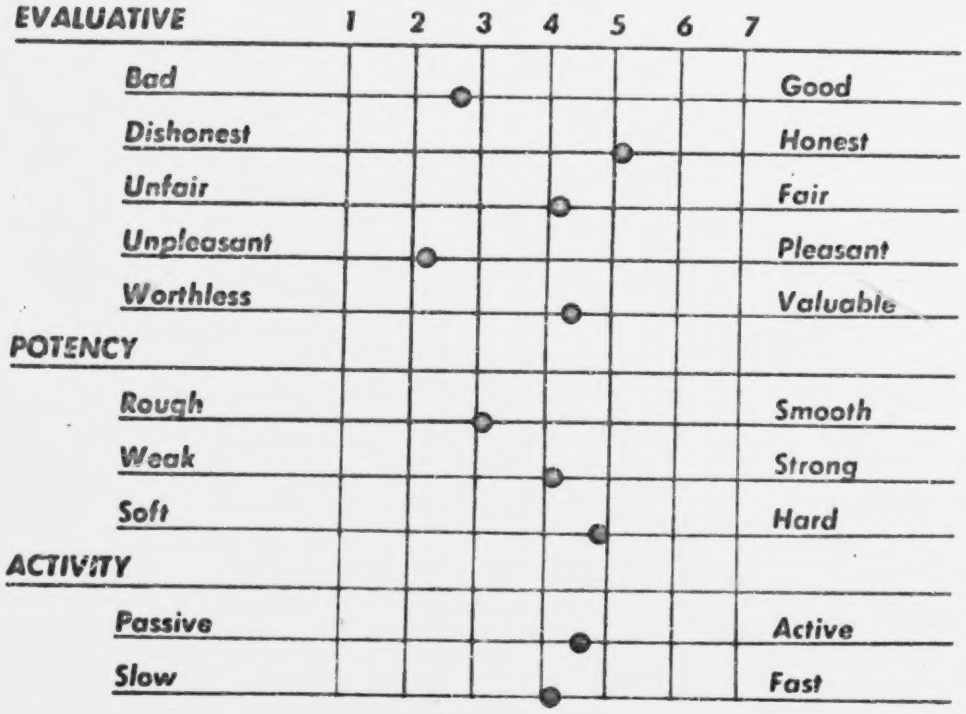
## Graphic Representation of Mean Scale Values for the Osgood Question

"ATHLETIC SCHOLARSHIPS"



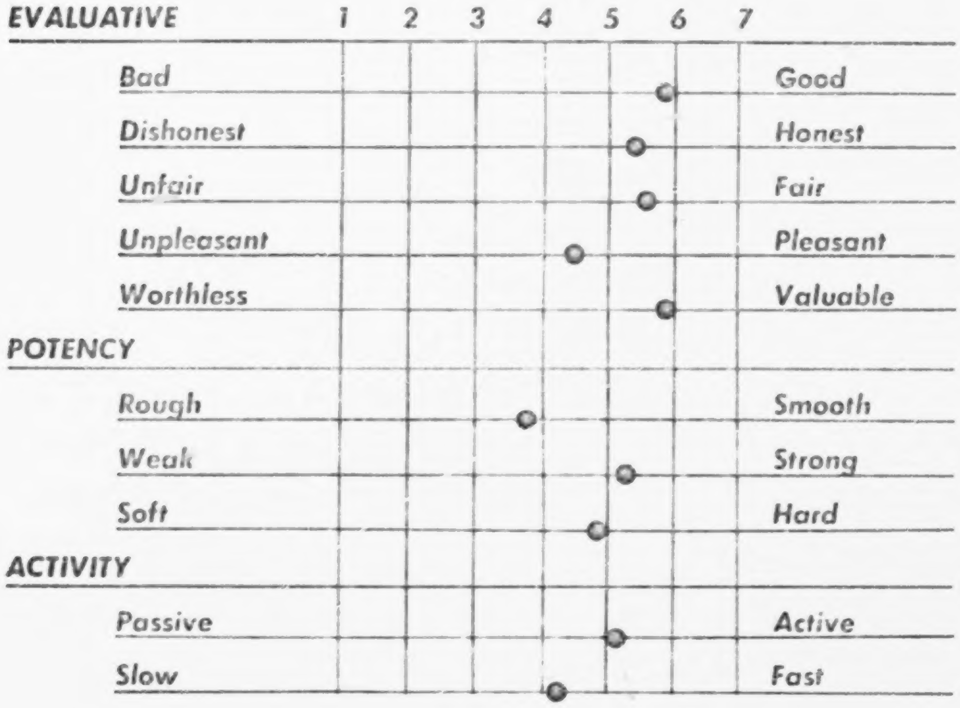
## Graphic Representation of Mean Scale Values for the Osgood Question

"ADDITIONAL TUITION INCREASE"



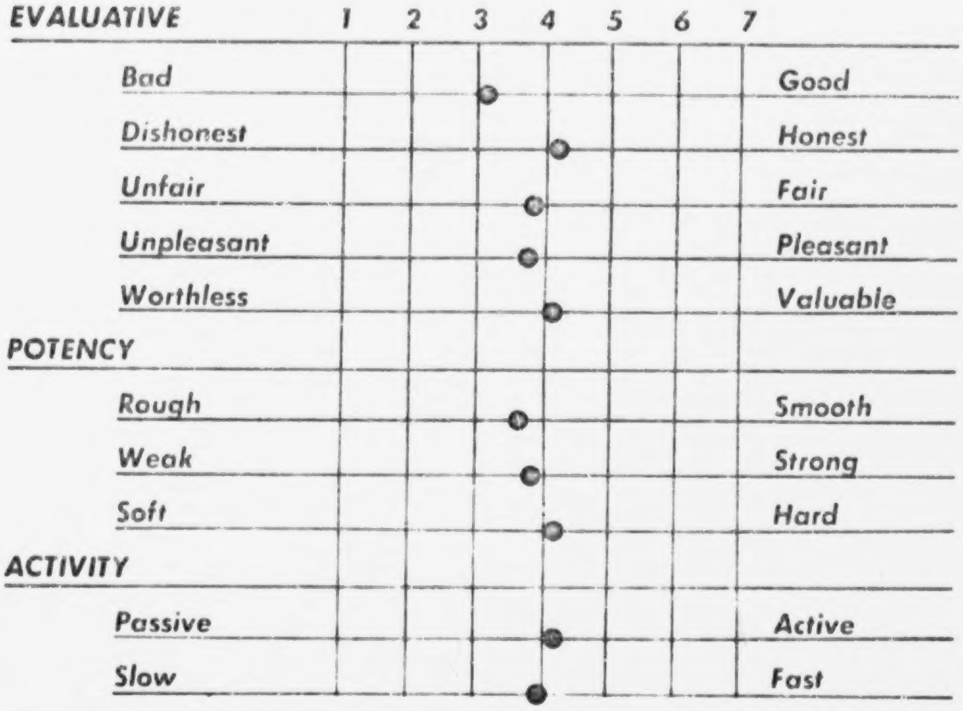
## Graphic Representation of Mean Scale Values for the Osgood Question

"HIGHER ENTRANCE REQUIREMENTS AT METRO UNIVERSITY"



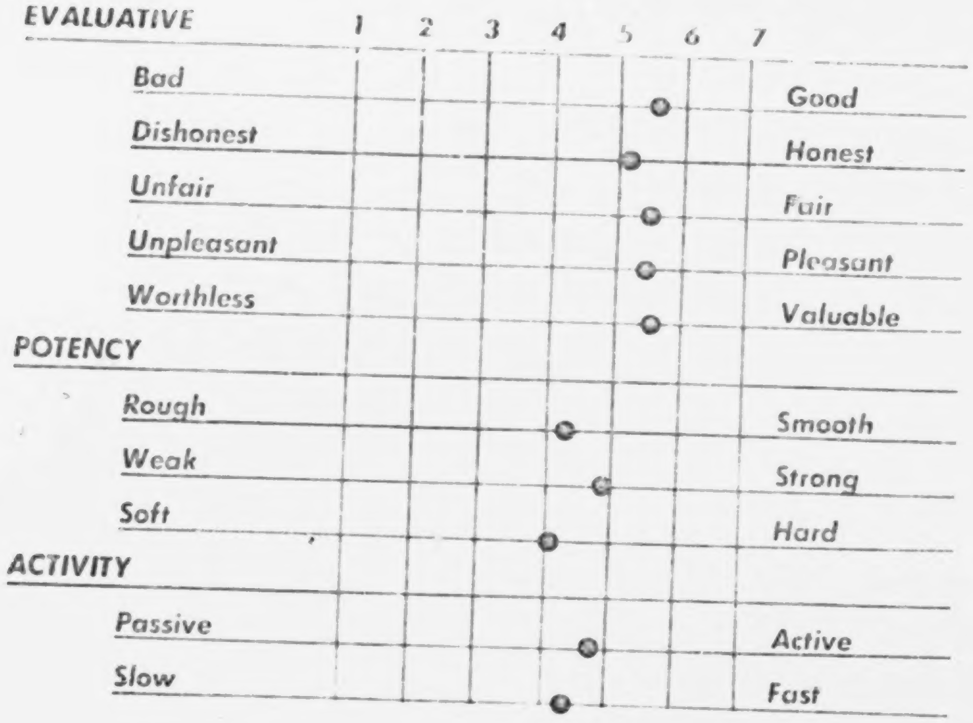
## Graphic Representation of Mean Scale Values for the Osgood Question

"MORE FRINGE BENEFITS, WITH SMALLER SALARY INCREASE"



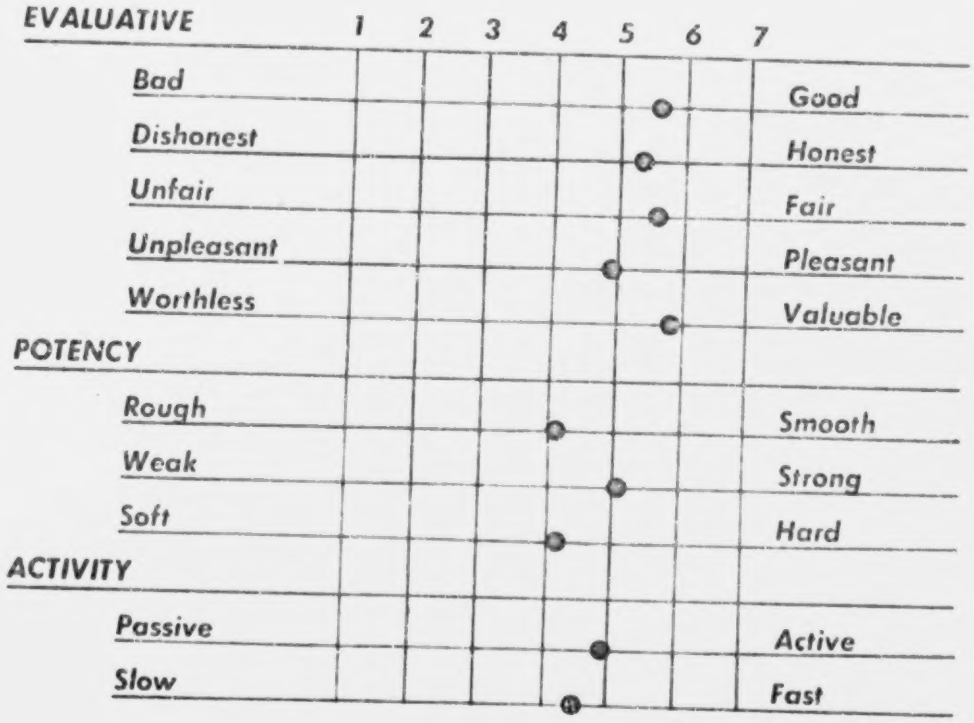
## Graphic Representation of Mean Scale Values for the Osgood Question

"LARGER SALARY INCREASE, WITH FEWER ADDITIONAL FRINGE BENEFITS"



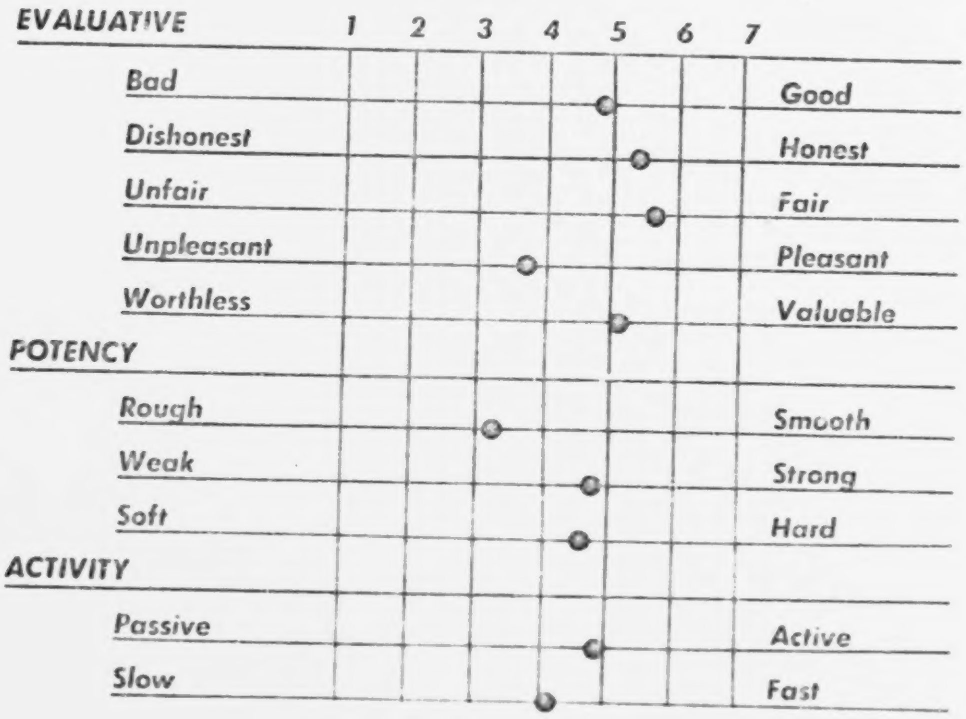
## Graphic Representation of Mean Scale Values for the Osgood Question

"METRO UNIVERSITY BECOMING A STATE UNIVERSITY"



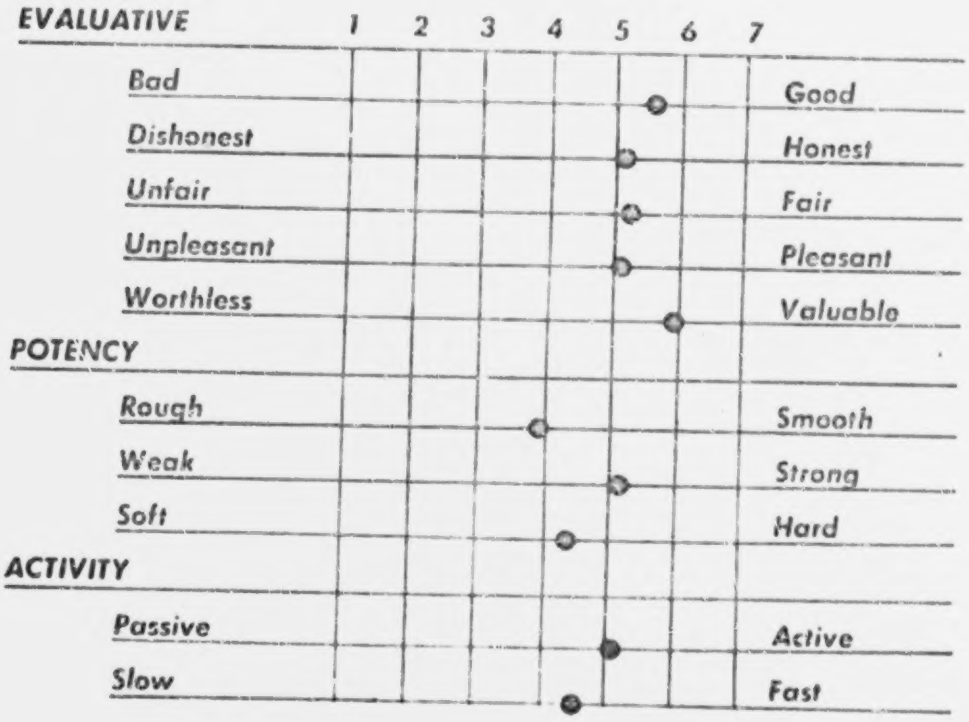
## Graphic Representation of Mean Scale Values for the Osgood Question

"ADMITTING QUALIFIED NEGROES TO METRO UNIVERSITY"



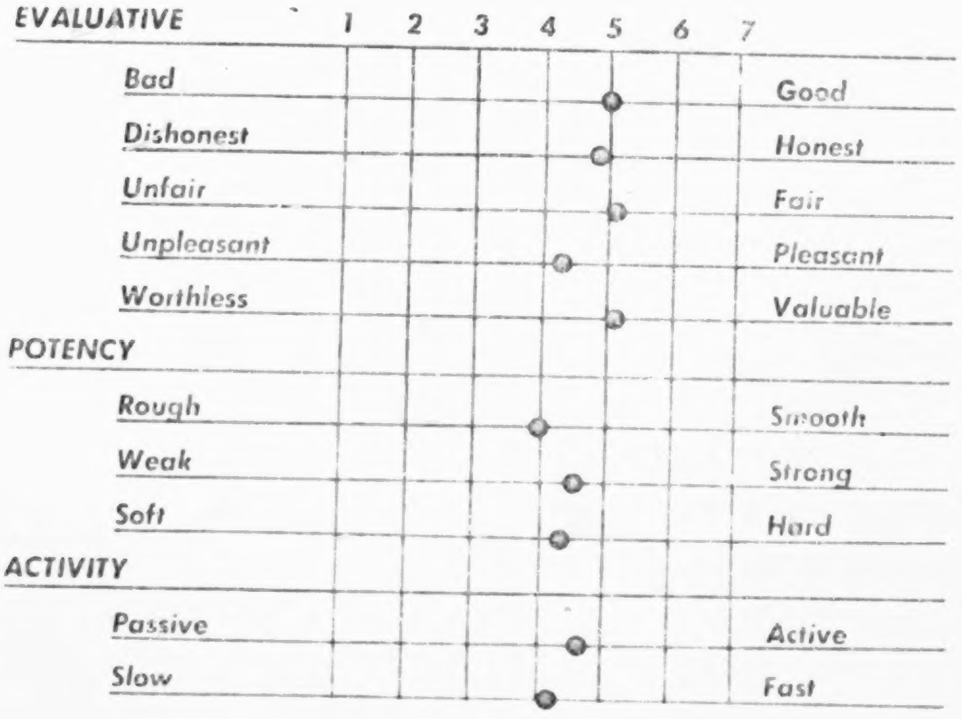
## Graphic Representation of Mean Scale Values for the Osgood Question

"EMPHASIS ON RESEARCH AT METRO UNIVERSITY"



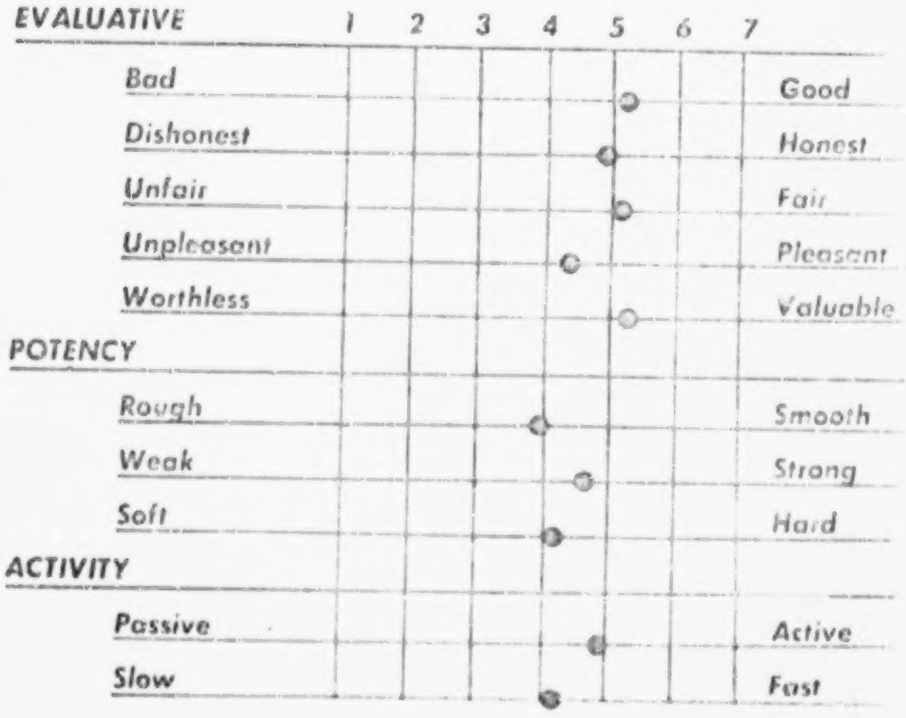
## Graphic Representation of Mean Scale Values for the Osgood Question

"TRAINING IN TEACHING METHODS FOR PROFESSORS"



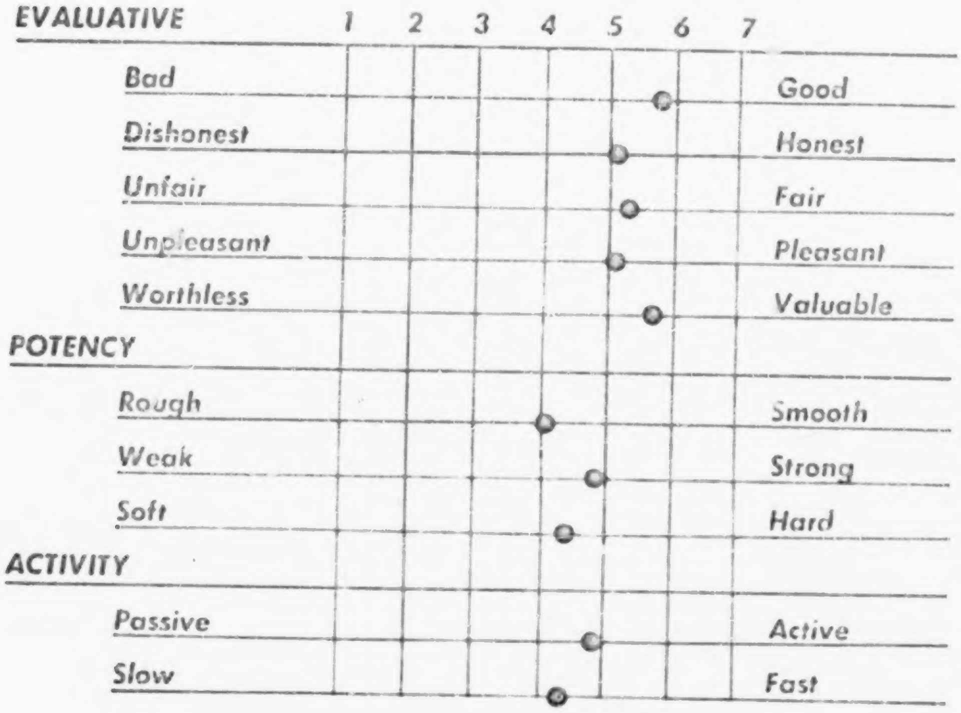
## Graphic Representation of Mean Scale Values for the Osgood Question

"TRAINING IN TEACHING METHODS FOR PROSPECTIVE PROFESSORS"



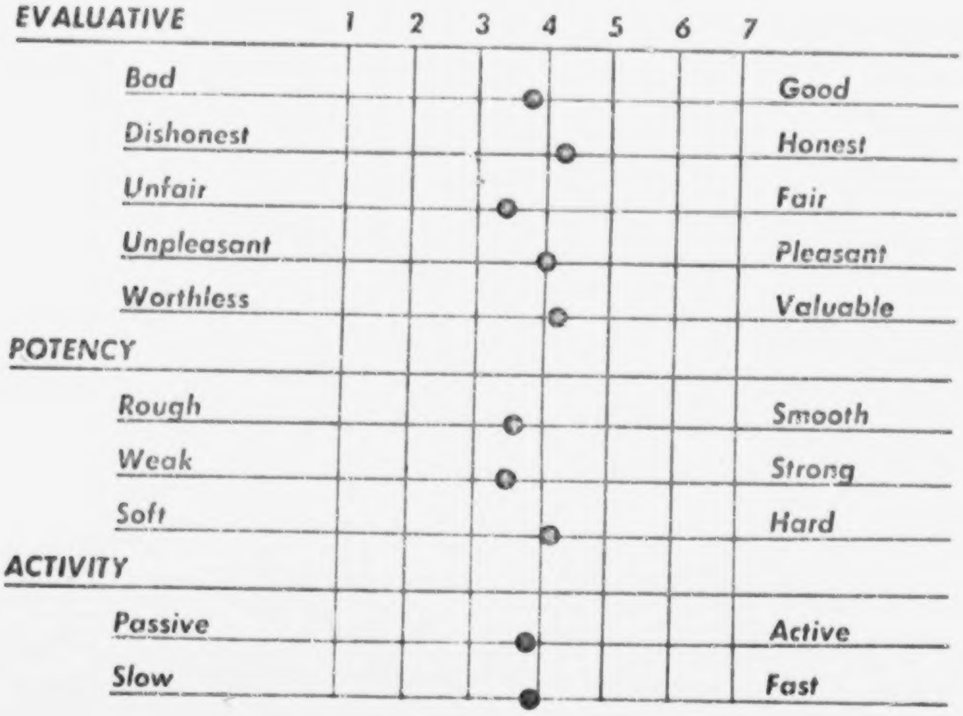
## Graphic Representation of Mean Scale Values for the Osgood Question

"LECTURE METHOD SUPPLEMENTED BY SMALL DISCUSSION SECTIONS FOR LARGE CLASSES"



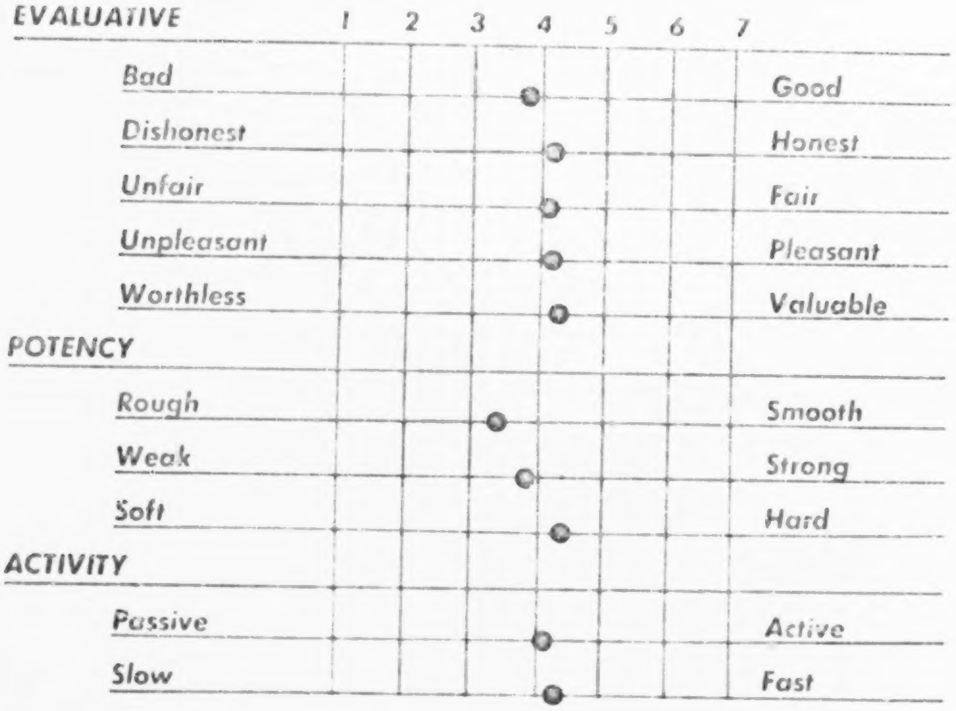
## Graphic Representation of Mean Scale Values for the Osgood Question

"STRAIGHT LECTURE METHOD FOR LARGE CLASSES"



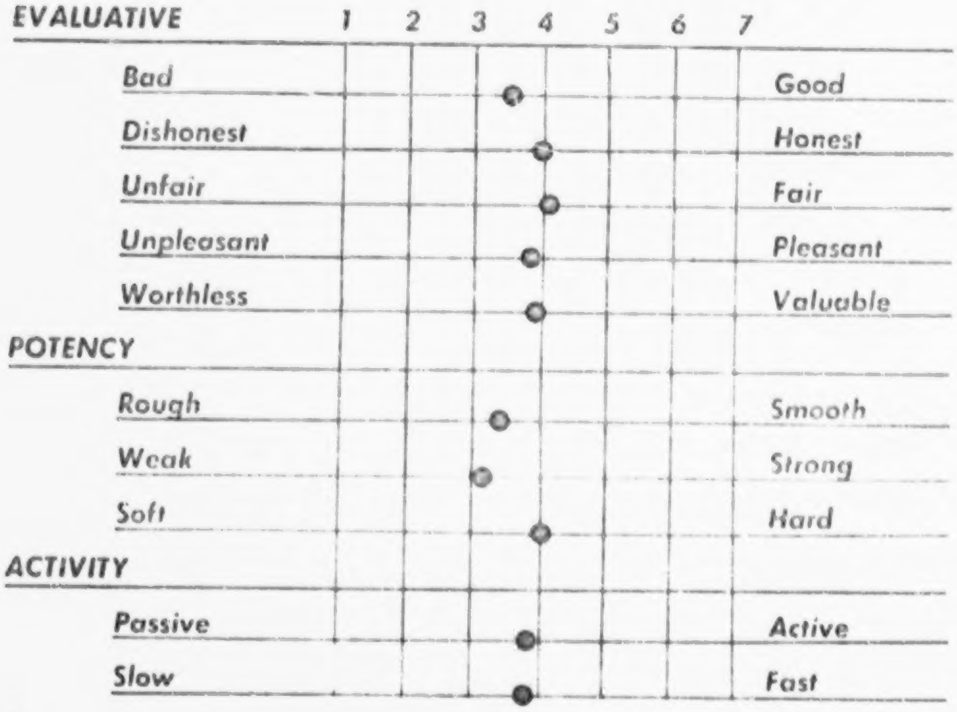
## Graphic Representation of Mean Scale Values for the Osgood Question

"HONORS COURSES CONSISTING ONLY OF TEXTBOOKS AND FINAL EXAMINATIONS"



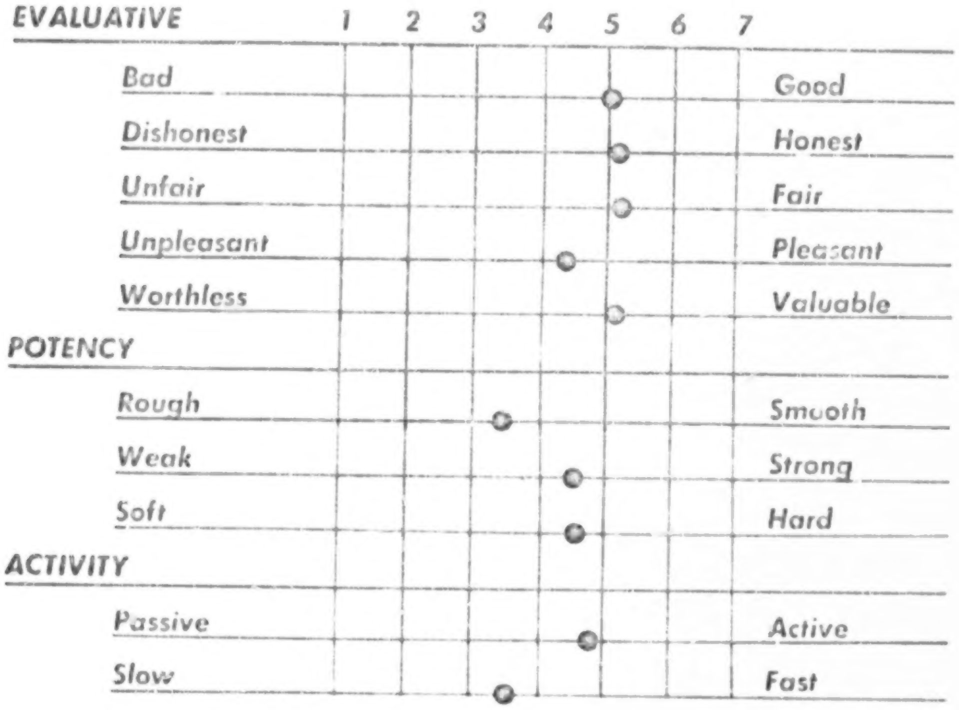
## Graphic Representation of Mean Scale Values for the Osgood Question

"CORRESPONDENCE COURSES"



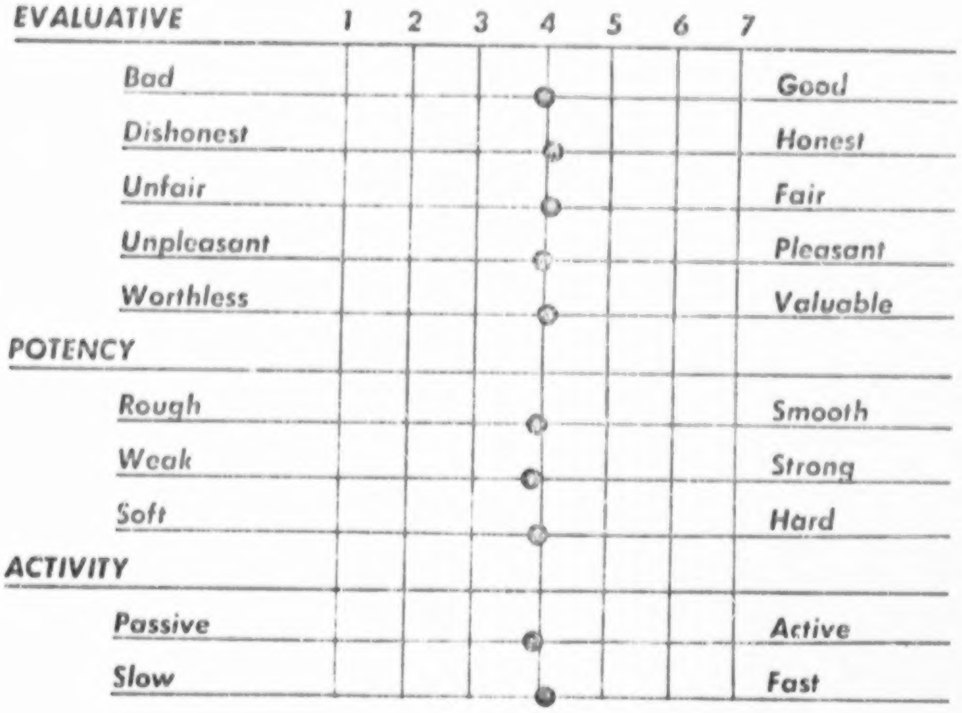
## Graphic Representation of Mean Scale Values for the Osgood Question

"ANSWERING STUDENTS' QUESTIONS IN LARGE CLASSES"



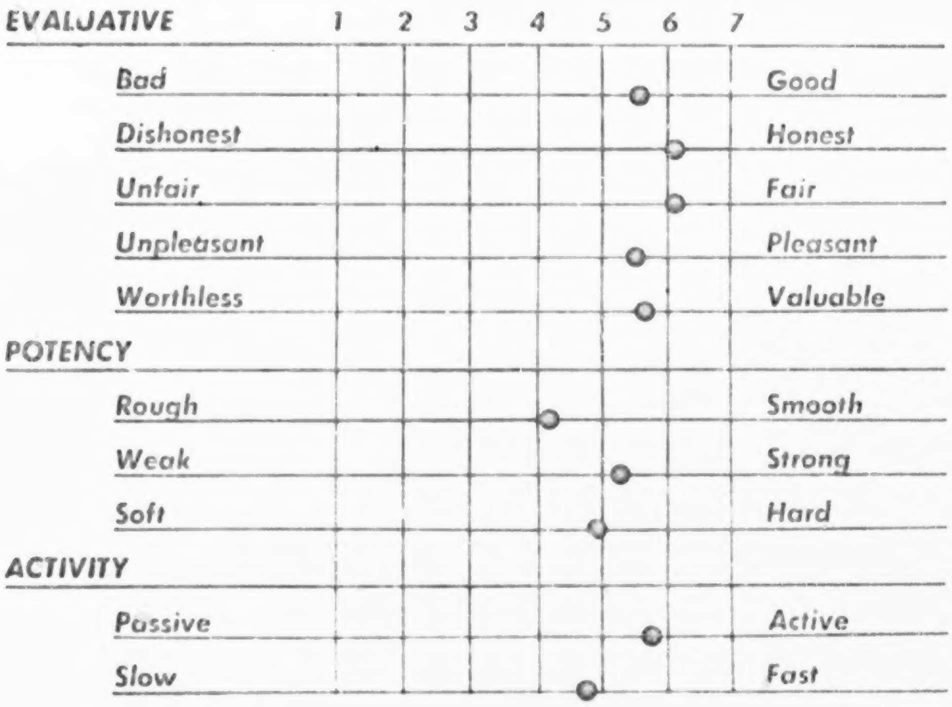
## Graphic Representation of Mean Scale Values for the Osgood Question

"TEACHING MACHINES"



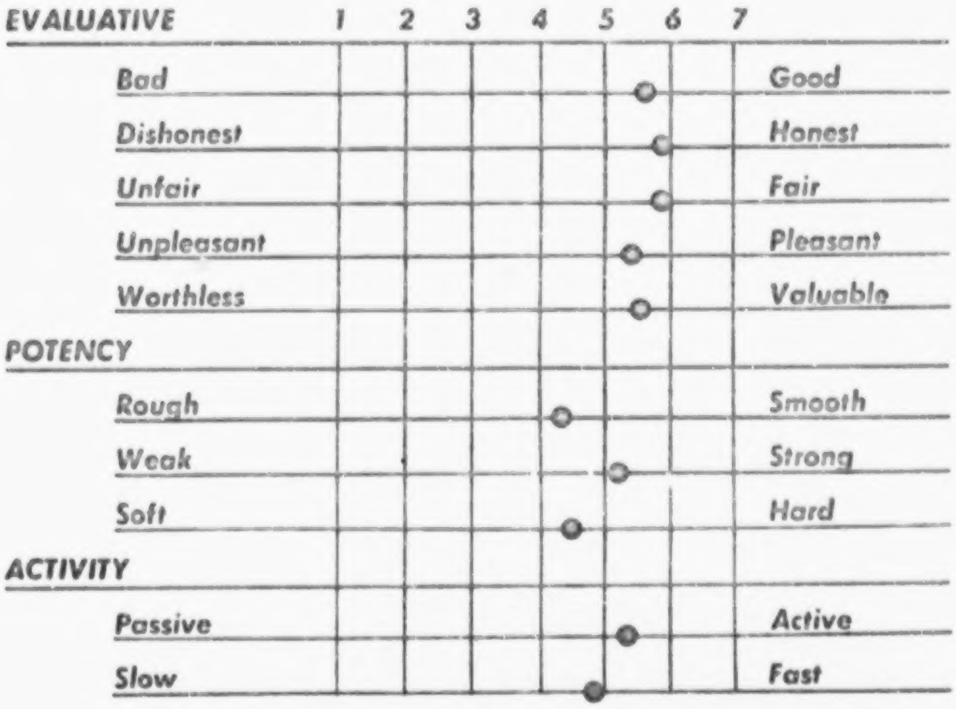
## Graphic Representation of Mean Scale Values for the Osgood Question

"MYSELF AS A PROFESSOR"



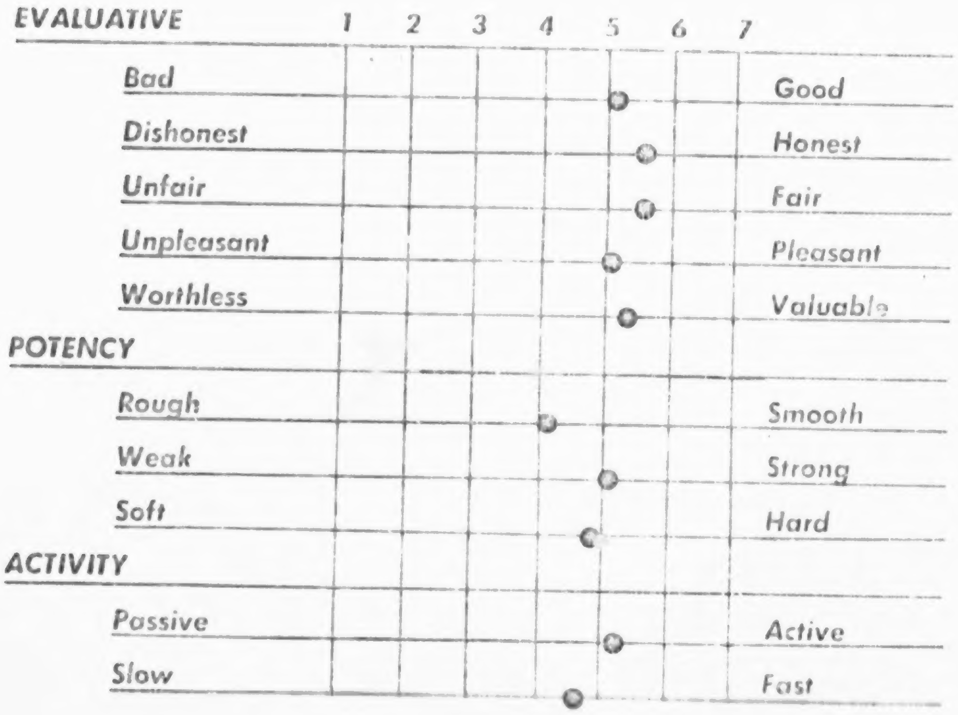
## Graphic Representation of Mean Scale Values for the Osgood Question

"MYSELF CONDUCTING A LECTURE COURSE"



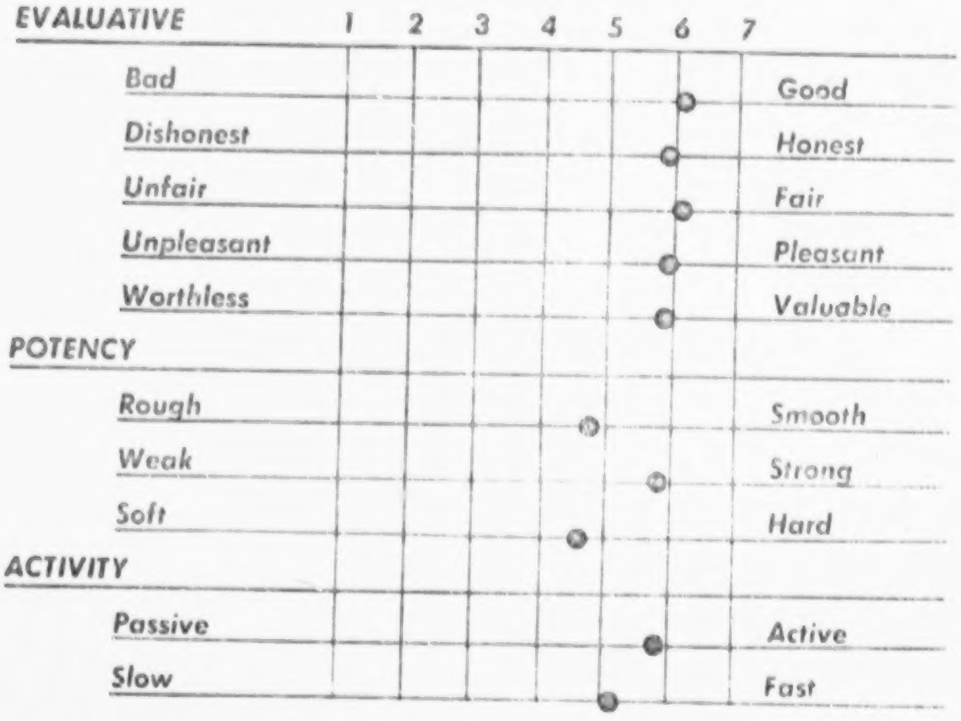
## Graphic Representation of Mean Scale Values for the Osgood Question

"MYSELF CONDUCTING A LARGE CLASS"



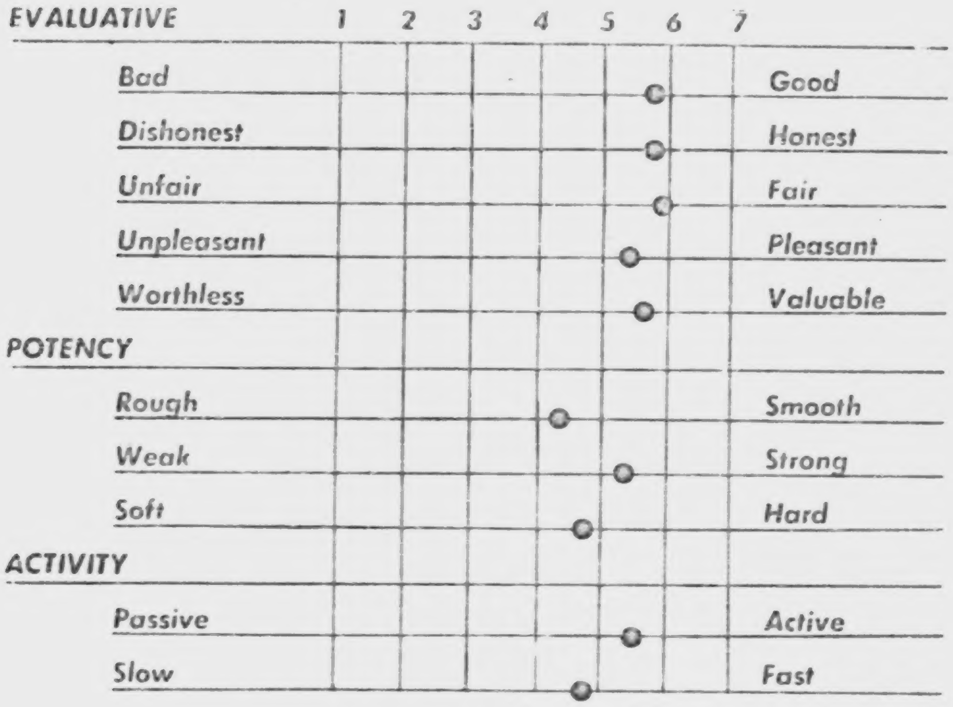
## Graphic Representation of Mean Scale Values for the Osgood Question

"MYSELF CONDUCTING A SMALL CLASS"



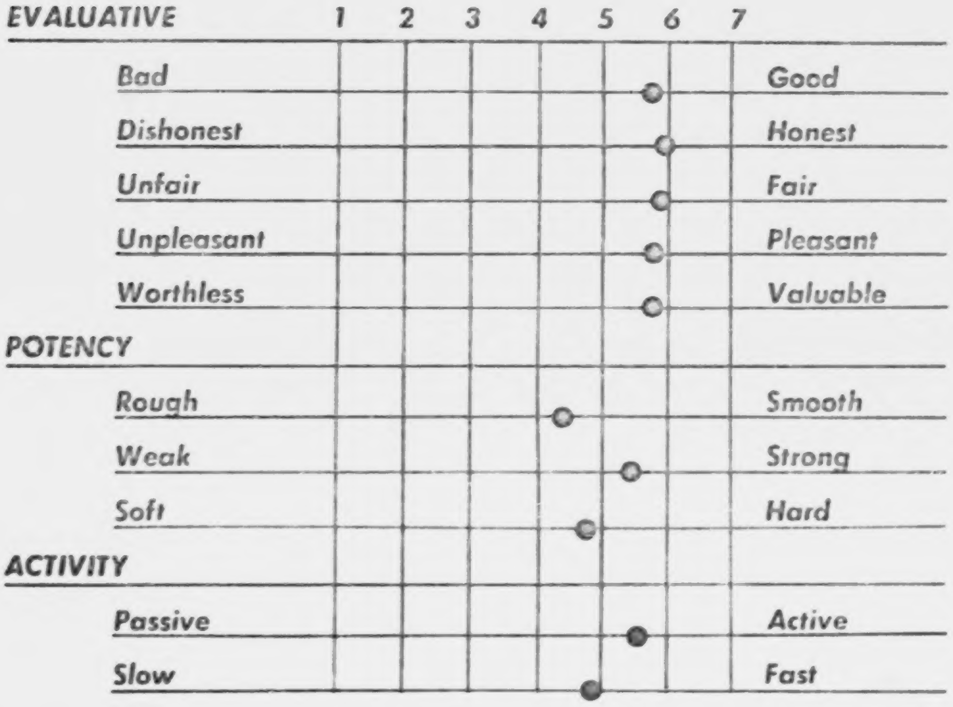
## Graphic Representation of Mean Scale Values for the Osgood Question

"MYSELF CONDUCTING AN INTRODUCTORY COURSE"



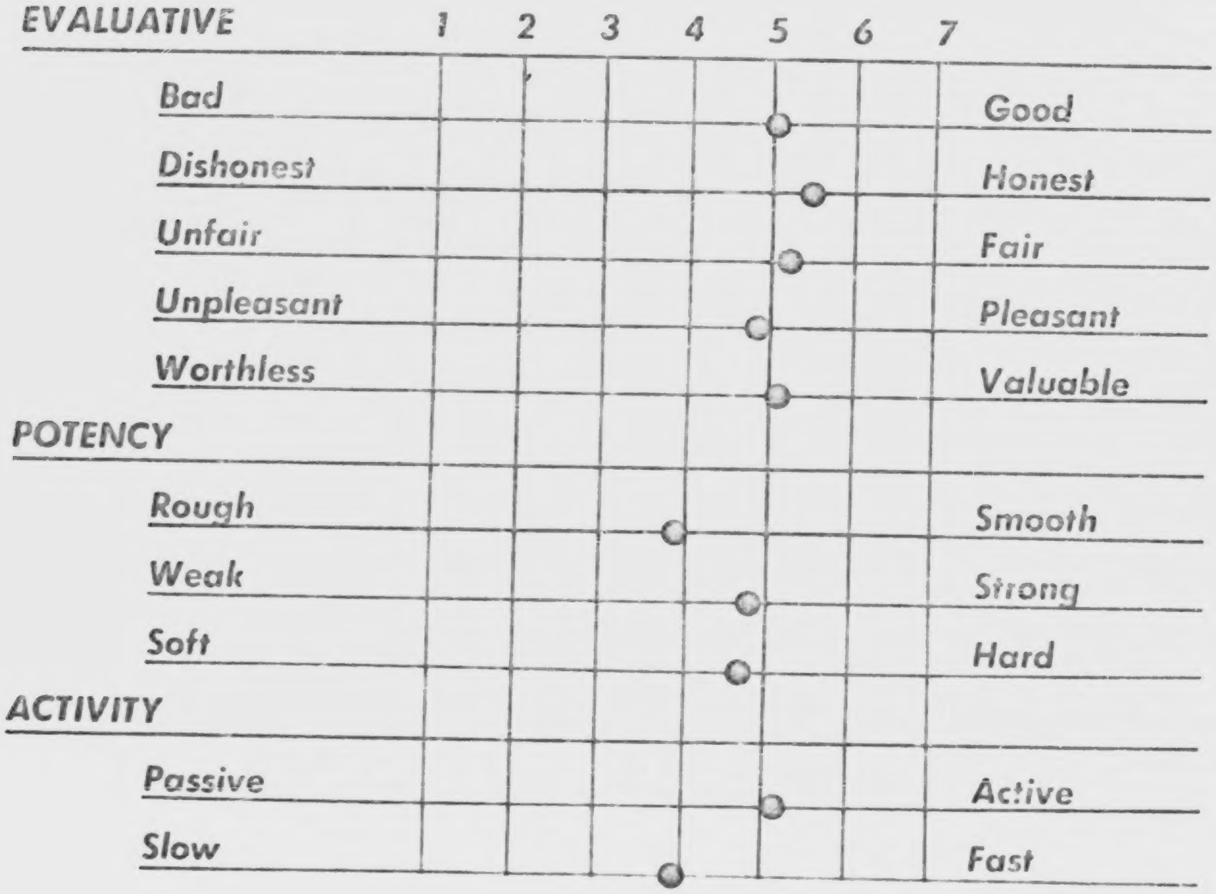
## Graphic Representation of Mean Scale Values for the Osgood Question

"MYSELF CONDUCTING AN ADVANCED COURSE"



## Graphic Representation of Mean Scale Values for the Osgood Question

"MYSELF DOING PUBLISHABLE RESEARCH"



## Appendix 9

## Comparisons Between Professors' Attitudes Toward ITV In the Present Study and Four Previous University Studies

CODE:

| Abbreviation | Study | Television Method Employed |
|---|---|---|
| Hou. | University of Houston | Video-Tape and Studio Playback Only |
| Mi. | Miami University | Closed-Circuit Television |
| Ore. | Oregon's State System of Higher Education | Inter-Institutional (Four Participating Schools) |
| P-1 | Pennsylvania State University, Project No. 1 | Closed-Circuit Television |
| P-2 | Pennsylvania State University, Project No. 2 | Closed-Circuit Television |

Category

Study[1]

GF = General Faculty

TEI = Television-Experienced Instructor

| Economic Factors | Hou. | Mi. | Ore. | P-1 | P-2 |
|---|---|---|---|---|---|
| Favorable | | | | | |
| Economy of staff and facilities: saves time, expense, energy, or space; productivity or faculty members per hour of class instruction can be increased; more efficient use of visual and demonstration; more material covered; lectures can be re-used (caution re: royalty arrangements); should make it practical for faculty members to have some assistance in teaching; working relationships between TV and Audio staffs satisfactory; or reduce teacher shortage. | GF<br>TEI | GF<br>TEI | GF | GF | GF |
| Reaches more students: teach greater number or answer to increased enrollments. | GF<br>TEI | GF<br>TEI | GF | | GF |
| Unfavorable | | | | | |
| Not economical: no manpower was saved considering the amount of auxiliary help necessary; no saving in time; required more preparation; expensive cost-wise; use of instructional television should be differed until it becomes practically necessary; or requires special training. | GF<br>TEI | | GF | TEI | |
| Will partially replace millions of dollars spent for education under guise of public relations. | GF | | | | |

1. Experimental Study in Instructional Procedures, Miami University, Oxford, Ohio, 1960; Instructional Television Research Report One and Two: An Investigation of Closed-Circuit Television for Teaching University Courses, The Pennsylvania State University, University Park, Pennsylvania, 1958; Inter-Institutional Teaching by Television in the Oregon State System of Higher Education, Report No. 1, 1957-1959.

| Instructor Factors | Hou. | Mi. | Ore. | P-1 | P-2 |
|---|---|---|---|---|---|
| Favorable | | | | | |
| Rewarding: some respond favorably to having themselves and their work widely observed; greater sense of personal satisfaction felt by some; or offers a challenge. | GF | TEI | | GF<br>TEI | GF |
| Unfavorable | | | | | |
| Fears of inadequacy: self-conscious; concern about high degree of visibility of each TV teacher; or adverse criticism by faculty. | TEI | TEI | GF | | GF |
| Oppose TV because of favorable experiences with large classes taught. | | | | | GF |
| Preparation Time and Strain Factor: increased or too much preparation required; extra training necessary; teaching before camera will increase stress on instructor already under strain; specific traumatic experiences; disturbed by mechanics; if load lighter, wouldn't object; or restriction in use of blackboard requires changing habits of instructors. | GF<br>TEI | GF<br>TEI | TEI | GF<br>TEI | GF |
| Restrictions and Handicaps: freedom of expression limited; "psychological distance" is severe handicap; loss of psychic "income"; or not rewarding for teacher. | | GF<br>TEI | GF | GF<br>TEI | |
| Role and Status: inferior role of staff member as section leader; detrimental to status of professor; loss of teacher personality; or TV dehumanizes instructor. | | | GF | GF | GF |

Instructor-Administration Factors

Favorable

None

| Instructor-Administration Factors | Hou. | Mi. | Ore. | P-1 | P-2 |
|---|---|---|---|---|---|
| Unfavorable | | | | | |
| Administrative problems: too much administrative duty involved; program launched with insufficient prior study; scheduling; impossible to discover talent; unsure of obtaining departmental assistance and full administrative support; cure-all attitude by administration; lack of time for preparation; or will lead to increase of teacher-load. | GF | | GF | GF | GF |
| Faculty: limits number of qualified instructors; could lead to training too few; faculty increase better than TV; or resistance of faculty to present challenge which TV offers. | TEI | | GF | GF | |
| Departmental considerations: dissension within and between departments; faculty will develop "star system"; or, professional rivalry, non-TV compared to TV faculty. | | | GF | GF | |
| Threat to job security: TV will lead to unemployment; threat by public viewing; loss of faculty who do good job; or need assurance that instructor will not be replaced. | GF<br>TEI | | GF | GF | |
| Instructor-Student Factors | | | | | |
| Favorable | | | | | |
| Promote student interest. | | | GF | | |
| Unfavorable | | | | | |
| Impersonal: TV lacks: interpersonal relationship, student participation, questions, discussion, interaction, recitation; lack of contact, students can't challenge; student identity lost; instructors miss contacts and supportive reactions with students; no rapport; or stimulation lacking. | GF<br>TEI | GF<br>TEI | GF<br>TEI | GF<br>TEI | GF |
| No feedback: to judge teaching effectiveness or to pace material presented; or barriers interposed between instructors and students. | GF | GF<br>TEI | GF<br>TEI | GF | GF |
| Students: discipline problem; opposition and resentment of television; or seriously inhibited in originating room in closed circuit television. | GF | | | TEI | GF |

| Curriculum Evaluations | Hou. | Mi. | Ore. | P-1 | P-2 |
|---|---|---|---|---|---|
| Intangible Factors . . . . . . . . . . . . . . . . . | | | | | |
| Favorable | | | | | |
| None | | | | | |
| Unfavorable | | | | | |
| Loss of full influence of instruction: ability to teach students to reason and communicate is inferior; students accept uncritically a "lecture authority"; can't develop students' ability of critical thinking; not as much overall growth and development as in conventional class; there were unmeasurable characteristics of instruction; or full "college education" and the "feel" or the subject can't be presented over TV. | GF | TEI | GF | TEI | GF |
| Learning Factors . . . . . . . . . . . . . . . . . | | | | | |
| Favorable | | | | | |
| Good effects on learning; fewer distractions and can be viewed at home; basic concepts learned as well as in conventional class; average grades and results as good as or better than classroom; student preference for TV; transference of more responsibility to student; or may promote standardization of course content. | GF<br>TEI | TEI | GF | | GF |
| Unfavorable | | | | | |
| Bad effects on learning: bad learning environment; may promote automation, standardization; commercializes education and weakens - produces mass medocrity; learning by television is non-permanent; loss of social aspect of learning; passive absorption - pouring in; bad for introductory courses; is boring; student attitude to TV is poor; misinterpretation of what is being said because of insufficient background; teaching facts rather than concepts; controversial viewpoints can't be presented; or lack of individual attention. | GF<br>TEI | GF<br>TEI | GF | GF | GF |

| Curriculum Evaluations (Cont.) | Hou. | Mi. | Ore. | P-1 | P-2 |
|---|---|---|---|---|---|
| Method and Material . . . . . . . . . . . . . . . . . | | | | | |
| Favorable | | | | | |
| Better teacher preparation and organization: Avoids duplication, opportunity for restructuring (if time is provided for this); develops new techniques in teaching, comparison of different classroom procedures; makes team teaching possible; provides less detail (reports and papers); provides use of 2-way TV; gains in terms of preparation and quality of lectures; or allows less abstraction. | TEI | | GF<br>TEI | GF | GF |
| Easier to teach. | | | | | GF |
| Enriches and improves instruction: good supplement and visual aid; outstanding lecturers available to all; offers advantages of demonstrations, panels, interviews, etc.; teaching aid; broader and more orderly presentation of material; spreads benefits among institutions of staff and equipment; or advantages of "front row seating". | GF<br>TEI | GF<br>TEI | GF | GF | GF |
| Unfavorable | | | | | |
| Difficult to teach by television: Physical arrangement was acceptable, but there were problems with lapel microphone, cord, lights; monitor receiver was of little use; pick-up microphone for students in TV originating room was unsatisfactory; or a few trial demonstrations put on without pre-planning were unsatisfactory. | TEI | | | TEI | |
| Inadequate: for grading (objective test scores not enough); can't adapt technique to individual differences; not possible for TV to replace classroom lecture; or good teacher in small class is better than TV. | GF<br>TEI | | GF | GF | |
| Limits teaching techniques: Doesn't motivate students; reduces flexibility of method; emphasis on acting (not teaching); no better than textbook; or tape would be as good. | TEI | | GF | | GF |

| Curriculum Evaluations (Cont.) | Hou. | Mi. | Ore. | P-1 | P-2 |
|---|---|---|---|---|---|
| Quality . . . . . . . . . . . . . . . . . . . . . . | | | | | |
| Favorable | | | | | |
| Quality of education: raise standard in introductory courses; high quality of lectures could be used; improve level of instruction; expose more students to better teacher; high quality of instruction available to all institutions; broaden viewpoints of institutions; an instructor can influence more students, but even so may at same time work with exceptional individual students; raises standards of teaching; or some felt TV could make contributions to higher education. | TEI | GF | GF<br>TEI | GF | |
| Unfavorable | | | | | |
| Damages higher education: cheapens or lowers quality of education; lowers standards of teaching; or lowers level of instruction. | GF<br>TEI | | GF | | GF |
| Miscellaneous . . . . . . . . . . . . . . . . . . . | | | | | |
| Favorable | | | | | |
| None | | | | | |
| Unfavorable | | | | | |
| Student inattentiveness or student relaxes too much. | GF | GF | GF | | GF |
| Takes a different student body (one with more initiative and digging out ability). | GF | | | | |
| Type of Course . . . . . . . . . . . . . . . . . . | | | | | |
| Favorable | | | | | |
| Courses (specific): some very highly enthusiastic for possibilities of televised instruction for: telecasting expensive experiments in Physical Sciences; or take over lower division load. | | | GF<br>TEI | | |
| Good idea for lecture courses: eliminates large classes; gives more intimate tone; freedom from monotony or time saver in teaching multiple-section courses; might be useful in extending information; or overcomes large classroom barriers. | GF | | GF | GF | GF |

| Curriculum Evaluations (Cont.) | Hou. | Mi. | Ore. | P-1 | P-2 |
|---|---|---|---|---|---|
| Type of Course . . . . . . . . . . . . . . . . . . . . | | | | | |
| Unfavorable | | | | | |
| Not suited to all courses: can't cover labs or workshops; can't relate lecture to lab or discussion; lack of color serious limitation for chemistry and art; students can't examine demonstrations after class; see only pictures, not actuality; limited blackboard vision; or can't control library and other assignments. | GF<br>TEI | TEI | GF<br>TEI | GF<br>TEI | GF |
| Professional Factors | | | | | |
| Favorable | | | | | |
| Aids exchanges of teaching techniques and ideas: cross-fertilization in developing ideas in a field (by a less cumbersome means of communication than the scholarly journal); ideal way to spread teaching techniques and ideas to other teachers; new means for providing teacher training; or should have training in television teaching. | GF | | GF | GF | |
| Instructors freed to engage in activities related to personal-professional development, research (by time saving of TV in basic multiple-section teaching and easing of teacher load). | TEI | | | | GF |
| Unfavorable | | | | | |
| Lack of intellectual atmosphere: no dignity; a cheap method of instruction; or "sanctity" of classroom is abridged. | TEI | | GF | GF<br>TEI | |
| Research: no information about or need for experimentation. | TEI | | GF | | |

| Miscellaneous Factors | Hou. | Mi. | Ore. | P-1 | P-2 |
|---|---|---|---|---|---|
| **Favorable** | | | | | |
| Good Media: good education-communication; good public relations and publicity; level of instruction from public information to college undergraduate work; medium for getting knowledge universally distributed; or promotes academic interest among general public. | GF<br>TEI | | GF | | GF |
| Unlimited audience: widens course opportunities for students; reduces relative isolation at campuses; best area of adult education; brings education to those unable to attend college; infinite possibilities; or may well be the wave of the future. | GF | | GF | | |
| Will meet Communist challenge to our technology. | GF | | | | |
| **Unfavorable** | | | | | |
| Acceptable as experiment, but does not warrant operational use; mechanical big brother; or is a failure because it is a machine. | GF | | GF | TEI | |
| Diverts attention from important problems in education; danger that TV may become permanent fixture; or invention of the devil, except in rare cases. | GF | | GF | | |
| Potential propaganda danger. | | | GF | | |